



National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

STS-8 AIR GROUND TRANSCRIPT
VOL. 1
LAUNCH THROUGH MET 1:21:39

PUBLIC INFORMATION OFFICE
NASA JOHNSON SPACE CENTER
HOUSTON, TEXAS 77058

REPRODUCTION WORK ORDER

CONTROL NO. 264470

1. TITLE STS-8 AIR GROUND TRANSCRIPT LAUNCH THROUGH PET 01:21:39		2. SIZE V ₀ L B 1/2 - 11		3. NO. ORIGINALS 206	4. NO. COPIES 75	5. TOTAL IMPRESSIONS 15,600
6. NAME OF REQUESTOR JANET ROSS		SIGNATURE (BRANCH LEVEL OR HIGHER)		7. PHONE X5111	8. ORGN. CODE AP3	9. DATE REQUEST 9/8/83
10. (A) CLASSIFICATION		11. DATE REQUIRED 9/14/83				
11. OFFSET	12. XEROX	13. DIAZO	14. FILM	15. BINDING		
<input type="checkbox"/> ONE SIDE ONLY <input checked="" type="checkbox"/> TWO SIDES <input checked="" type="checkbox"/> COVER <i>blue</i>	<input type="checkbox"/> VELLUM <input checked="" type="checkbox"/> BOND	<input type="checkbox"/> BLUELINE <input type="checkbox"/> BLACKLINE <input type="checkbox"/> SEPIA <input type="checkbox"/> MYLAR	<input type="checkbox"/> NEGATIVE <input type="checkbox"/> POSITIVE <input type="checkbox"/> MYLAR	<input type="checkbox"/> LOOSE <input checked="" type="checkbox"/> COLLATE <input type="checkbox"/> FOLD <input type="checkbox"/> PAD <input type="checkbox"/> SNAPOUT	STAPLE <input type="checkbox"/> SIDE <input checked="" type="checkbox"/> CORNER <input type="checkbox"/> TOP	HOLES PUNCHED <input checked="" type="checkbox"/> 3 HOLES <input type="checkbox"/> 5 HOLES <input checked="" type="checkbox"/> SMALL <input type="checkbox"/> LARGE
16. DELIVERY INSTRUCTIONS <input type="checkbox"/> PICKUP <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FORWARD TO DISTRIBUTION						
17. ADDITIONAL INSTRUCTIONS						DUE OUT
PLEASE PRINT FRONT AND BACK COVERS ON BLUE CARD STOCK.						CAMERA
PLEASE MAIL TO MAIL CODE AP3.						9-14
						PRESS
						BINDERY
						9-14
						COMPLETED

KSC PAO We will resume the countdown at 6:23, 23 minutes after the hour, which will 2:23 this morning giving us a launch at 2:32 a.m. Eastern Daylight Time. Countdown clock will start at T minus 9 minutes and 30 seconds. We do have a message from the White house that was sent by President Reagan to the flight crew for this morning's launch. It reads "Recently NASA orbiting infared observatory made a stunning discovery. And it's found that the star Vega some 26 light years from Earth is circled by an enormous ring or shell of particals that could be building blocks of a solar system." T minus 9 minutes and counting. Continuing with that statement, "we now have the first direct evidence that solid objects of substantial size exists around the star other than our sun. This breakthrough provides mankind with new insights into the mystery and immensity of the cosmos that we are only beginning to understand. Twenty five years into the space age, our quest to explore the unknown goes on, the 8th mission of the Space Shuttle paves a new path to greater knowledge of our Earth and of the universe that surrounds us. Also with this effort we acknowledge finally the first ascent of a black American into space. Challenger's mission will continue to expand the Shuttle's capabilities to do things we have never before done in orbit and it will mark the Shuttle's first night launch and landing. I believe that we are truely on the threshold of a new freedom, the potential to probe the solar system with greater ease, less risk and thus the ability to use space to enhance the well being of all people. On the eve of this great adventure, Nancy and I send our best wishes for a safe and productive mission to Commander Dick Truly and his crew, Dan Brandenstein, Dale Gardner, Guy Bluford, and Bill Thornton. Good luck and may God go with you", signed Ronald Reagan. T minus 7 minutes 50 seconds and counting. Everything continuing to go well toward the launch of STS-8. T minus 7 minutes 30 seconds. We will get a go from ground launch sequencers to start the retraction of the Orbiter access arm, the walkway used by the astronauts to climb in the vechicle, the arm can be put back in place within about 15 to 20 seconds if an emergency arises and the crew must evacuate the pad. The white room now going back away from the vehicle. T minus 7 minutes and counting. T minus 6 minutes 43 seconds and counting.

TD 5.

Go ahead 5.

734 is confirmed.

Alright copy.

(garble) OTC.

KSC PAO T minus 6 minus 30 seconds and counting. Ground launch sequencer now in total control of the countdown. It will

remain in control and the T minus 31 seconds when control is passed to the onboard flight control system. T minus 6 minutes 15 seconds and counting.

KSC PAO T minus 6 minutes and counting. Orbiter test conductor giving pilot Brandenstein a go to perform the auxiliary power unit prestart. Brandenstein will configure switches in the cockpit with the APU's in the ready to start configuration. Brandenstein reports the APU prestart is complete. They will be activated at the T minus 5 minute mark. T minus 5 minutes 30 seconds and counting. Mission Control has transmitted the signal to start the flight recorders. These two recorders will collect measurements of Shuttle systems performance during flight and will be played back for evaluation after the mission.

OTC flight confirm step 743.

Spacecraft Copy.

JSC PAO Houston flight confirms recorders are on. T minus 5 minutes 4 seconds and counting. T minus 5 minutes and counting, we have a go for APU start. Brandenstein now flipping the 3 remaining switches in the cockpit to start the 3 auxiliary power units. APU activation is complete. Hydraulic pressure reported to be normal. This now limits our unplanned hold capability to 7 minutes if we should run into a problem between now and T minus 31 seconds when primary control of the countdown is turned over to Challenger's onboard computers.

END OF TAPE

PAO T-4 minutes, 30 seconds and counting. SRB and external tanks safe and arm devices have been armed, and inhibit will remain on the S&As until T-10 seconds when the range safety destruct system is activated. Main fuel valve heaters on the 3 Shuttle main engines have been turned on in preparation for engine start.

SPACECRAFT And the CDR heater reconfig is complete.

CAPCOM All right..(Garble).

KSC PAO Commander Truley reports heater reconfiguration complete. T-4 minutes and counting. The crew has been asked to close the visors on their launch and entry helmets, final purge sequence of the main engines now under way. T-3 minutes, 50 seconds and counting. Orbiter aerosurface test is under way, Orbiter's flight control services now being moved to a preprogram pattern to verify they are ready for launch. T-3 minutes, 35 seconds and counting.

SPACECRAFT (garble) NTD we are showing...

KSC PAO T-3 minutes, 30 seconds, Orbiter, ground support equipment power bus has been turned off. The vehicle is now on internal power, running off it's onboard fuel cells fed by ground reactants through the T zero umbilicals. T-3 minutes, 10 seconds, engine gimbal checks are complete, Shuttle main engines have been placed in the start position. T-3 minutes and counting, T-2 minutes, 55 seconds, external tank liquid oxygen pressurization has started, purging of the Shuttle main engine is terminated. -2 minutes, 43 seconds and counting, retraction has started on the gaseous oxygen vent hood, ground launch sequencer will make the final check to make sure the vent arm is fully retracted at T-37 seconds. T-2 minutes, 30 seconds and counting, Orbiter Test Conductor has requested Pilot Brandenstein to clear caution and warning memory system. T-2 minutes, 20 seconds fuel cell ground supplies have been terminated, Challenger now running off its onboard fuel cell reactants. T-2 minutes, 10 seconds and counting. T-2 minutes and counting, coming up on liquid hydrogen pressurization. T-1 minute, 57 seconds, liquid hydrogen replenish has been terminated, LH2 pressurization of flight level under way, vehicle now completely isolated from ground loading equipment. T-1 minute, 43 seconds and counting, less than 2 minutes away now from a spectacular predawn lift-off of STS-8 and its 5-man crew. At T-1 minute ground launch sequencer will verify the Shuttle main engines are ready to start. T-1 minute and 20 seconds and counting, T-1 minute, 15 seconds, liquid hydrogen tank now at flight pressure. T-1 minute and counting, sound suppression water system now on, prelift-off water will be released at T-16 seconds. T-50 seconds and counting, hydrogen burn igniters have been armed. T-45 seconds and counting, solid rocket booster development flight instrumentation recorders

STS-8 AIR/GROUND TRANSCRIPT t5j 242:06:27 8/30/83 PAGE 2

going to the record mode, main propulsion system, liquid oxygen, liquid hydrogen, outboard fill valves have been closed. T-35 seconds and counting, T-31, we have a go for auto sequence start, Challenger's 4 redundant computers now assuming primary control of critical vehicle functions from now through lift-off. T-20 seconds and counting, SRB engine nozzle gimbal profile, now underway. T-11, 10, 9, 8, 7, 6, 5, we have engine start, 2, 1. We have ignition and we have lift-off. Lift-off, 32 minutes after the hour and the Shuttle has cleared the tower.

CAPCOM Tower clear.

SPACECRAFT Roll program.

CAPCOM Roger, roll.

PAO Houston confirms good roll program. Standing by for main engine throttle down to control's structural load's on Challenger during max-Q, the period of maximum aerodynamic pressure. 30 seconds elapsed, altitude, one.

END OF TAPE

PAO - - confirms good roll program, standing by for a main engine throttle down to control structural loads on Challenger during max Q, the period of maximum aerodynamic pressure. 30 seconds elapsed, altitude 1 mile and a half. Throttle's coming down to 69%. 50 seconds, altitude 6 miles, down range 3 miles. Main engine throttle is going back to 100%. Challenger is go at throttle up.

CAPCOM Challenger, Houston, you're go at throttle up.

SPACECRAFT Roger, Houston. We're looking at the moon directly at it.

CAPCOM Roger that.

PAO 1 minute, 30 seconds, velocity 3700 feet per second, altitude 12 1/2 miles, downrange, 9 miles. All 3 main engines still at 100%.

SPACECRAFT (garble) speaking.

PAO Standing by for a solid rocket booster separation.

SPACECRAFT SRB sep is complete, Houston.

CAPCOM Roger.

PAO Confirm SRB separation. Guidance has confirmed.

CAPCOM (garble) your first stage performance was nominal.

SPACECRAFT Boy, Bryan, you should have seen it from here, it was blue light almost all the way up.

CAPCOM Wow, I bet it was.

CAPCOM Challenger, Houston, you have 2 engine TAL capability.

SPACECRAFT Roger, Houston, 2 engine TAL capability.

PAO Challenger now capable to transatlantic abort to Dakar Senegal on Africa's west coast if one of the main engines fails.

PAO 3 minutes elapsed velocity, 6500 feet per second, altitude is 40 miles, down range, 68 miles. Flight Director, Jay Greene taking a status before Challenger reaches the negative return point. Getting a go from all flight controllers. 3 minutes, 45 seconds, velocity 7700 feet per second, altitude 49 miles, down range, 112 miles. It's 4 minutes, Challenger's go.

CAPCOM Challenger, Houston, negative return.

SPACECRAFT Roger, negative return.

CAPCOM Challenger, Houston, press to MECO.

SPACECRAFT Press to MECO. We'll see you on Labor Day.

CAPCOM Roger, that.

PAO Challenger no longer capable of returning to the launch site. Press to MECO call tells Spacecraft Commander, Dick Truley that Challenger can now continue up hill if one main engine failed. 4 minutes, 40 seconds, all 3 engines still solid at 100%. Velocity is 9700 per second, altitude 55 nautical miles, down range, 185 miles. 5 minutes, 15 seconds, Challenger still go, velocity 11,000 feet per second, altitude is 57 nautical miles, Challenger is 236 miles down range.

SPACECRAFT Okay, Houston, onboard (garble), everything is looking good. We can see the stars real brightly and we are seeing little flashes of light which I guess are reflections off the bottom of the tank.

CAPCOM Roger.

SPACECRAFT We are looking straight up at the (garble).

CAPCOM Roger that.

CAPCOM Challenger, Houston, you are single engine TAL capability.

SPACECRAFT Roger, Houston, single engine TAL capability.

PAO Challenger now capable of reaching Dakar airport if 2 main engines fail. 6 minutes, 10 seconds elapsed. Velocity 13,750 feet per second, altitude 58 miles, down range 336 miles. Predicting main engine cut up for 8 minutes, 42 seconds.

CAPCOM Challenger, Houston, you are a single engine, press to MECO.

SPACECRAFT Roger, Houston, single engine press to MECO.

PAO That call tells the crew to press on even if 2 main
. . .

END OF TAPE

SPACECRAFT Roger, Houston, single engine, press to MECO.

PAO That call tells the crew to press on even if two men engine shut down early. 7 minutes 5 seconds elapsed. Velocity 17,000 feet per second. Altitude's 58 nautical miles, down range 459 nautical miles. All three engines still at 100 percent. Flight director Greene taking a status check, getting a GO from all controllers. 7 minutes 45 seconds elapsed. Velocity 20,380 feet per second, altitude's 56, 58 nautical miles down range 580 miles. All three main engines now into 3g throttling maintaining 3g's on the vehicle.

SPACECRAFT Okay, we're throttling Houston and still looking good, we're still feeling the reflections off the tank.

CAPCOM Roger.

PAO 23,000 feet per second velocity, altitude is 58 and a half miles, down range 681 miles. 8 minutes 30 seconds elapsed. MECO is still predicted for 842.

SPACECRAFT MECO, Houston.

CAPCOM Roger, MECO.

PAO MECO is right on the second. Flight dynamics officer Willis Bolt says main engine cutoff was nominal.

CAPCOM Roger, tank.

SPACECRAFT (Garble). Okay, Houston, targets look nominal onboard.

CAPCOM Challenger, Houston, APU's shutdown on time. OMS 1 will be nominal.

SPACECRAFT Thank you. And we're maneuvering to burn attitude.

CAPCOM Roger.

PAO External tank has separated, OMS 1 will be nominal, 238 feet per second, burn time of 2 minutes 25 seconds. Targeting for an orbit of 160 by 52 nautical miles with the OMS 1 burn. Challenger's in the burn attitude now.

CAPCOM Challenger, Houston, 30 seconds to LOS. Configure LOS, we'll see you at Dakar at 18.

SPACECRAFT Okay, Houston, we (garble) the OMS 1 burn is (garble) nominal start.

CAPCOM Roger.

STS-8 AIR/GROUND TRANSCRIPT t7j 242:06:38 8/30/83 PAGE 2

PAO We confirm ignition on both engines and the burn looks good. This is Shuttle Control, Bermuda has loss of signal, the OMS 1 burn in progress at LOS about a minute to go in the burn at that time. Was preceding nominally. Acquisition at Dakar in 5 minutes. At a mission elapsed time of 12 minutes 40 seconds, this is Shuttle Control, Houston. This is Shuttle Control, it's 17 minutes mission elapsed time, Challenger about 20 seconds away from acquisition at Dakar.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t8j 242:06:44 8/30/83 PAGE 1

PAO This is Shuttle Control, it is 17 minutes elapsed time, Challenger about 20 seconds away from acquisition at Dakar.

CAPCOM Challenger, Houston, with you at Dakar for 6 1/2 minutes.

SPACECRAFT Roger, Houston, OMS 1 went nominal, we're looking at the first sunrise, it's absolutely beautiful and set up for the gimbal check.

CAPCOM Roger, you are go for the gimbal check.

SPACECRAFT Okay, the secondary gimbal check is in progress.

CAPCOM Roger.

SPACECRAFT Okay the primary gimbal check is in progress, secondaries look good and if you like our targets, I'm ready to maneuver anytime.

CAPCOM Roger, stand by.

SPACECRAFT Okay.

CAPCOM Challenger, Houston, targets look good, you're go for the maneuver.

SPACECRAFT Okay. Primary gimbal check looked good onboard the maneuver's in progress.

CAPCOM Roger.

SPACECRAFT Houston, Challenger, PLT (garble) completed the vacuum and (garble) actuation.

CAPCOM Roger.

SPACECRAFT Houston, CDR. We are on page 3-7, we have completed everything up to the OMS burn (garble) and that's what we are getting ready to do that now.

CAPCOM Roger.

SPACECRAFT Okay, Houston, CDR, we've completed that, we are on page 3-8. I'm safe in the seat, we are beginning to get out of the seats, I'm going - Dan and I will remain on comm and not take off the helmets until after LOS.

CAPCOM Roger.

CAPCOM Challenger, Houston, 30 seconds to LOS, configure LOS, we'll see you at Botswana at 0 plus 35.

STS-8 AIR/GROUND TRANSCRIPT t8j 242:06:44 8/30/83 PAGE 2

SPACECRAFT Roger, Bryan, we'll see you at Botswana. We are looking straight down at the earth but it's very cloudy.

CAPCOM Roger.

PAO This is Shuttle Control at 25 minutes mission elapsed time. Dakar has LOS, next station is Botswana in 9 1/2 minutes. At LOS, the crew was starting to get out of the seats and Challenger was in attitude for the OMS-2 burn which will occur about 44 minutes mission elapsed time. About 19 1/2 minutes from now. The OMS-2 burn will be nominal. A delta v change in velocity of 194.7 feet per second, a burn time of 1 minute, 57 seconds. Challenger's current orbit is 160 by 52 nautical miles, OMS-2 will circularize the orbit at 160 nautical miles. At 26 minutes mission elapsed time, this is Shuttle Control, Houston.

CAPCOM Challenger, Houston with you at Botswana for 2 minutes.

SPACECRAFT Roger, Houston, We read you (garble) taking some pictures.

CAPCOM Roger.

INCO INCO, Capcom.

INCO Yeah, I think the bad noise we are getting is UHF.

SPACECRAFT Houston, Challenger. How do you read?

CAPCOM Hear you loud and clear, Richard.

SPACECRAFT Roger, everything is going nominally onboard. We are all off the LEH's. Dan, Guy and I are still in the seats preparing for OMS-1 and things are going very well.

CAPCOM Roger, copy.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t9j 242:07:07 8/30/83 PAGE 1

SPACECRAFT Roger, everything's going nominally onboard, we're all off the L&H's. Dan, Guy and I are still in the seats preparing for OMS 1, and things are doing very well.

CAPCOM Roger, copy. Challenger, Houston, we're 30 seconds to LOS, configure LOS, see you at Yarragadee at 52.

SPACECRAFT Roger, we'll see you there.

CAPCOM Roger, have a good burn.

PAO This is Shuttle Control, Botswana has loss of signal with Challenger, next acquisition through Yarragadee in 14 minutes. OMS 2 burn about 7 1/2 minutes away, we'll get a burn report at Yarragadee. At 37 minutes mission elapsed time, this is Shuttle Control Houston.

PAO This is Shuttle Control at 51 minutes mission elapsed time, Challenger approaching acquisition through Yarragadee.

CAPCOM Challenger, Houston with you through Yarragadee for 8 minutes. Challenger, Houston with you through Yarragadee for 7 1/2.

SPACECRAFT Roger Houston loud and clear, sorry I was pushing the ICOM's switch. The OMS 2 burn went nominally, residuals were almost zero, we've completed the ascent checklist. We're on page 1-6 and 7 of the PDP.

CAPCOM Roger copy, thank you.

SPACECRAFT And for the MPS guys we have gotten a number of MPS helium messages which are normal, look normal, we have down arrows on the left and right engines both A and B, regs A and B, and on the B leg in the center engine.

CAPCOM Roger copy, as expected.

SPACECRAFT Roger, concur. And Houston, CDR, you still there?

CAPCOM That's affirmative, 4 more minutes.

SPACECRAFT Okay, just keeping you updated, we're on step 4 getting ready to load memory configuration 3, everything going well.

CAPCOM Roger copy.

SPACECRAFT Houston, CDR, we're in G&C OPS-2 on the top of page 1-7, step A, going SM.

STS-8 AIR/GROUND TRANSCRIPT t9j 242:07:07 8/30/83 PAGE 2

CAPCOM Roger copy, thank you. Challenger, Houston, we're 30 seconds to LOS, we'll see you at Hawaii at 1 + 18.

SPACECRAFT Roger Houston, we'll see you at Hawaii and everything's going well onboard. See you there.

PAO This is Shuttle Control, Yarragadee has loss of signal. Spacecraft Commander Dick Truley reporting a nominal OMS-2 burn and reporting transitioning to OPS-2 the on-orbit computer program. Said everything onboard going well. Next station to see Challenger will be Hawaii in just under 17 minutes. At 1 hour mission elapsed time this is Shuttle Control Houston.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t10j 242:07:32 8/30/83 PAGE 1

PAO ...just under 17 minutes. At 1 hour mission elapsed time this is Shuttle Control Houston. This is Shuttle Control at 1 hour 17 minutes mission elapsed time. Challenger is coming up on acquisition through Hawaii.

CAPCOM Challenger, Houston with you through Hawaii for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear. I'm on page 1 dash 9er. We're in (garble), I'm on the right side of the page loading the PDIT comm.

CAPCOM Roger, copy.

PAO This is Shuttle Control, Challenger is in the proper attitude for payload bay door opening. That activity should begin during this Hawaii pass. Challenger is on orbit 160 nautical miles circular. The orbital period, 1 hour 30 minutes 36 seconds.

CAPCOM Challenger, Houston, with a question on R15.

SPACECRAFT Roger, Houston, go ahead.

CAPCOM Rog, we're having trouble getting the TV's powered up. Wanted to check if you'd had closed the CCTV circuit breakers? There are R15 row delta.

SPACECRAFT Stand by.

SPACECRAFT Houston, Challenger, I'm down on R15 and row delta, all the circuit breakers are in.

CAPCOM Roger, thank you.

SPACECRAFT And Houston, Challenger, we're ready to do the doors on your go.

CAPCOM Roger you're go to open the doors.

SPACECRAFT Roger.

CAPCOM And Challenger, Houston, in 30 seconds we'll be handing over to TDRS and if that's not successful, we'll pick you up at Goldstone at 1 plus 29.

SPACECRAFT Roger, Houston, and we're getting ready to do doors.

CAPCOM Roger. Challenger, Houston, with you on TDRS. Challenger, Houston, with you on TDRS.

STS-8 AIR/GROUND TRANSCRIPT t10j 242:07:32 8/30/83 PAGE 2

SPACECRAFT Houston, Challenger, loud and clear, how do you read the CDR?

CAPCOM Roger, loud and clear also.

SPACECRAFT And the starboard door is almost all the way open.

CAPCOM Roger, copy. Challenger, Houston, with a question on the TV cameras.

SPACECRAFT Stand by 1. Okay, Houston, the port doors are coming open now it's still in the auto sequence.

CAPCOM Roger.

SPACECRAFT And go ahead with your question on the TV.

CAPCOM Roger, we don't show, the TV's getting powered up properly, we were wondering if you could select one of the payload bay cameras, see if you can get it on your monitor.

SPACECRAFT Wilco. Any desire on which one?

CAPCOM The A camera would be good.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, Houston.

SPACECRAFT Okay, a word on the doors. The (garble) latches went on or faster than normal, the starboard forward and aft bulkhead latches were on time. The starboard door looked open on time but before we got an open indication on the CRT, it took a minute plus 55, it looked all the way open, it was just sitting out there but it took like two more...

END OF TAPE

SPACECRAFT The starboard forward and aft bulkhead latches were on time. The starboard door looked open on time, but it, before we got open indication on the CRT it took a minute plus 55, it looked all the way open, it was just sitting out there, but it took like (garble) times to get the indication. Then the port latches worked nominal and the port door worked nominal with a total elapsed time of 4 minutes and 15 seconds for the whole procedure.

CAPCOM Roger we copy that, Dan.

SPACECRAFT And Houston, CDR, I've got camera A operating on the, and it looks like it's operating normally, on monitor 1, would you like me to put it on the downlink?

CAPCOM Roger, Richard, we'd like that.

SPACECRAFT Okay Houston, the, my configuration onboard, I'm going to leave you with the TV system, I'm showing all cameras on, camera A is on the downlink at the moment and downlink is enabled. If you have any other problems just let us know and we'll try to help you.

CAPCOM Wilco, thank you. Challenger, Houston. I've got a switch reconfig on panel A14.

SPACECRAFT Roger, Houston, go ahead.

CAPCOM Roger, on the RCS OMS heaters, in the first row, I'd like the crossfeed lines, alpha to auto and bravo off.

SPACECRAFT Okay standby one, let me get back there. Okay. Houston, CDR, say again the switch that you wanted.

CAPCOM Roger, the last two switches in the first row, the OMS crossfeed lines, like A to auto, Bravo, off.

SPACECRAFT Okay you've got them, A, auto, bravo, off.

CAPCOM Roger thank you and we'd like a G&C spec 1 for variable parameters please.

SPACECRAFT Wilco, it'll be on CRT number 2.

CAPCOM Roger thank you.

PAO We have TV now from the payload bay camera.

CAPCOM And Challenger, Houston, we're getting some good pictures of the payload bay and the American flag on the front of the PFTA.

SPACECRAFT Outstanding. And it sounds like this COMM is, sounds loud and clear, you're a little less volume than we were over the previous sight but it's very clear.

CAPCOM Roger you're loud and clear also.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT I'm just doing a voice check for MS2, read you loud and clear.

CAPCOM You're loud and clear also Guy. And Challenger, Houston, you've got a go to turn the high load EVAP off and a go for VERNIS.

SPACECRAFT Roger Houston, I just turned the high load EVAP off based on the rad OPS temps, I appreciate it and we're going to vernier jets.

CAPCOM Roger. Challenger, Houston, we didn't get our variable parameters up a while ago. Could you give us another G&C spec one please.

SPACECRAFT Wilco, CRT number 2.

CAPCOM Thank you. Challenger, Houston, we're through with the G&C spec one, we'd like an SM spec 1, please.

SPACECRAFT Roger, it's on its way. Be on CRT 1.

CAPCOM Thank you, Dan.

SPACECRAFT Okay, it's on CRT 1 now.

CAPCOM Roger.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead. CDR, Houston, go ahead.

SPACECRAFT Roger, stand by a second Houston, he's firing up his wireless.

CAPCOM Copy.

SPACECRAFT Houston, CDR, let me try again.

CAPCOM Roger, you're loud and clear. And Challenger, Houston (garble).

STS-8 AIR/GROUND TRANSCRIPT t11j 242:08:03 8/30/83 PAGE 3

SPACECRAFT Okay. He said that he transmit. Okay thank you
and (garble).

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t12j 242:08:19 8/30/83 PAGE 1

SPACECRAFT He seems to be transmit - okay, thank you and the CDR seems to be transmitting but not receiving, we'll work it out.

CAPCOM Roger.

SPACECRAFT Houston Challenger.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT During the post insertion sun shield closing and the payload recorder config, when we check that payload panel talkback it's reading barberpole not gray.

CAPCOM Roger, copy.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead, Guy.

SPACECRAFT Do you want us to continue with the closing of the sunshield or do you want us to hold up here?

CAPCOM Roger, stand by for a second.

SPACECRAFT Roger, standing by. We'll hold up on the sunshield closing.

CAPCOM And stand by 1 on the sunshield closing, we're going to send a command and try to fix the recorder.

SPACECRAFT Rog, we've also noticed that we've lost power on CCTV Would you check on that. And we've got gray on the payload recorder panel, (garble) control talkback.

CAPCOM Roger, copy, stand by.

SPACECRAFT And also, did you command the CCTV's off?

CAPCOM Roger, that's affirmative, we did. And Challenger, Houston, we'd like you to go ahead and turn the TV's back on and go ahead with the sunshield closing.

SPACECRAFT We're going to go to panel on the TV's and we're going to turn them back on.

CAPCOM Roger, that's correct.

SPACECRAFT Houston, we're getting ready to close the sunshields.

CAPCOM Roger, copy.

PAO This is Shuttle Control, the payloads officer reports the sunshield is closed.

SPACECRAFT Houston, CDR.

CAPCOM CDR, Houston, go.

SPACECRAFT Roger, I'm assuming, I was off comm just a few minutes trying to solve a WCCU thing, I'm assuming you're through with spec 1 on CRT 1?

CAPCOM That's affirmative, we're through with the CRT's.

SPACECRAFT Okay, I'm getting ready to do the bubble 11 on page 1-11, the startrackers.

SPACECRAFT Houston, Challenger.

CAPCOM Rog. Go ahead, Guy.

SPACECRAFT We're in the health check here and we're getting ready to go external power. We'd like to know if you want us to go now while we have AOS.

CAPCOM Roger, we're ready for external power.

SPACECRAFT Do you have enough time for that? Okay go external power.

CAPCOM Roger. And Challenger, Houston, we'll be using the GNC spec 1 you have on CRT 2 if you just leave that there for us.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Got external power on and spacecraft looks good.

CAPCOM Roger, we see that.

SPACECRAFT And Houston, CDR as you can - -

CAPCOM And CDR, Houston, you cut out.

SPACECRAFT Houston, CDR, how do you read?

CAPCOM You're loud and clear now, Richard.

SPACECRAFT Okay, I did two self tests on the minus y to get it to pass, it did pass on the second one so that's complete.

CAPCOM Okay, copy.

STS-8 AIR/GROUND TRANSCRIPT t12j 242:08:19 8/30/83 PAGE 3

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead Guy.

SPACECRAFT We've check the decom, we've got decom enabled and on the closing of the sunshield we've got two closed, we got two versus three closes on the close indications on the microswitches.

CAPCOM Roger, we show the same thing down here. And Challenger, Houston we're through with the GNC spec 1 on CRT 2.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t13j 242:08:30 8/30/83 PAGE 1

SPACECRAFT Roger. And Houston, PLT with the wireless comm check.

CAPCOM You're loud and clear, Dan.

SPACECRAFT Okay Houston, star tracker test went well, the doors opened in 8 seconds, so we're way - -

CAPCOM And Challenger, Houston, he advised we've lost the downlink through TDRS, if you can hear me we've still got the uplink. Challenger, Houston, how do you read?

SPACECRAFT Challenger, Houston, we can read you.

CAPCOM Right, we've lost TDRS lock momentarily, I'm just UHF only this time. Richard, copied your star tracker doors opened okay and if there's any more it was cut out.

PAO This is Shuttle Control. Communications with Challenger through UHF at Ascension at the present time. Both telemetry and voice communications have been through the tracking and data relay satellite since loss of signal at Hawaii. We have momentarily lost the downlink on TDRS but within the Ascension acquisition and we're going UHF there.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead.

SPACECRAFT Rog, we're complete with the (health) check and we're ready to go back to internal power. Are you ready for us?

CAPCOM Standby one.

SPACECRAFT You, okay.

CAPCOM Challenger, Houston, we're about to go UHF, LOS, see you at Botswana in 3 minutes.

SPACECRAFT All right, going internal power.

CAPCOM You're go for internal power, Guy.

SPACECRAFT (garble)

PAO This is Shuttle Control at 2 hours, 5 minutes mission elapsed time. We'll have UHF communications again in 2 minutes at Botswana.

CAPCOM Challenger, Houston, with you through Botswana for 8 minutes.

STS-8 AIR/GROUND TRANSCRIPT t13j 242:08:30 8/30/83 PAGE 2

SPACECRAFT Roger Houston, loud and clear.

CAPCOM Loud and clear also Dan and you're go for orbit OPS.

SPACECRAFT Roger, I'll start the fuel cell purge right now.

CAPCOM Roger.

SPACECRAFT Houston the INSAT powered off and the PA powered off and everything went well with that.

CAPCOM Roger, copy and we're getting a little bit of a squeal from you, Dan.

SPACECRAFT Roger. Okay Houston, we just had a speaker on, we got that cleared up now.

CAPCOM Roger, sounds better. Challenger, Houston, approaching LOS, see you at Yarragadee at 2 + 28.

SPACECRAFT Roger Houston, and fuel cell purge started at 2 + 10.

CAPCOM Roger Dan, copy.

PAO This is Shuttle Control. Challenger's out of range of Botswana, next acquisition through Yarragadee in about 11 1/2 minutes. Challenger has a go for orbit operations. INSAT has been powered off, all activities aboard Challenger proceeding according to the timeline. At 2 hours, 16 minutes mission elapsed time this is Shuttle Control Houston. This is Shuttle Control at 2 hours 27 minutes mission elapsed time, we're standing by for acquisition through Yarragadee.

CAPCOM Challenger, Houston with you through Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston loud and clear.

CAPCOM You're loud and...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t14j 242:08:54 8/30/83 PAGE 1

CAPCOM Challenger, Houston with you through Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM You're loud and clear also.

SPACECRAFT And Dale is down stairs and he asked me to tell you that the RMS activation went okay, I'm presently in this rad deploy procedures, just open the latches and they opened in 22 seconds.

CAPCOM Copy.

SPACECRAFT Okay, Houston, the rads are deployed and the times were all double motor time, looking good.

CAPCOM Roger, copy. Challenger, Houston, we're 45 seconds to LOS, we'll see you at Guam at 2 plus 42.

SPACECRAFT Roger, see you there.

PAO This is Shuttle Control at 2 hours 41 minutes mission elapsed time. Guam will acquire Challenger in about 40 seconds.

CAPCOM Challenger, Houston with you through Guam for 3 minutes.

SPACECRAFT Okay, Houston, read you loud and clear.

CAPCOM Roger, you're loud and clear also.

SPACECRAFT And Houston, got a question for you. Well we are, okay I was getting ready to do the APU hydraulic thermal conditioning enable and checked all the switches for the CIRC pumps and the right power source, and went to CIRC pump number 2 and I didn't get any pressure increase (garble) 4 psi, then got a down arrow with a hydraulic message. And we tried an alternate which is I believe charlie, that's true, main charlie and still no joy on so we decided to leave it right there and let you take a look at it.

CAPCOM Roger thank you, Dan, we'll take a look at it.

SPACECRAFT The procedures are 1-2 in the orbit ops checklist.

CAPCOM Okay. Challenger, Houston, Dan, do you have a time on that, that we could look at playback?

SPACECRAFT Okay, let me call the (garble) summary and get the first message.

STS-8 AIR/GROUND TRANSCRIPT t14j 242:08:54 8/30/83 PAGE 2

CAPCOM Roger, we've got that here Dan.

SPACECRAFT Okay, it started about 236.

CAPCOM Copy, 2 plus 36.

SPACECRAFT In the meantime, I'm just leaving that hummer sit and try to get the caution and warning reset.

CAPCOM You bet. Challenger, Houston, we're about 20 seconds to LOS, see you at Hawaii at 2 plus 53.

SPACECRAFT Roger, we'll see you there.

PAO This is Shuttle Control. Guam has loss of signal. Hawaii is next in 7 and a half minutes. At 2 hours 45 minutes mission elapsed time, this is Shuttle Control Houston. This is Shuttle Control, at 2 hours 52 minutes mission elapsed time. Standing by for acquisition though Hawaii.

CAPCOM Challenger, Houston, with you through Hawaii for 8 minutes.

SPACECRAFT Roger, Houston, that was 4 or 5 minutes getting started in the maneuver to IMU align, align attitude but we're on the way now.

CAPCOM Roger, and you're go for item 48 both SM and GNC whenever you want.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t15j 242:09:24 8/30/83 PAGE 1

CAPCOM Challenger, Houston with you through Hawaii for 8 minutes.

SPACECRAFT Roger Houston, that was 4, 5 minutes getting started in the maneuver to IMU align attitude but we're on the way now.

CAPCOM Roger and you're go for item 48 both SM and G&C whenever you want.

SPACECRAFT Wilco. Houston, Challenger.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT We're getting ready to do the CFES (garble), we're on time (garble).

CAPCOM Roger understand, on time for CFES power up. Challenger, Houston, Dan in troubleshooting the APU problem we'd like for you to check on R2 and make sure the hydraulic circ pump switches are all off.

SPACECRAFT Roger, they are now, I inadvertently left number 2 on.

CAPCOM Okay. And Challenger, Houston, I've got a note on the change to the CAP on the PCS config.

SPACECRAFT Roger Houston, go ahead.

CAPCOM Roger, per your note that you'd written in there, we'd like for you to do the PCS config, orbit OPS 5-6, except the 14.7 cabin REG inlet valves, leave them closed. And then do the manual cabin atmosphere management setup, orbit OPS, page 5-10.

SPACECRAFT Roger understand, thanks alot and it's already written in there, appreciate it. And Houston, if you'll notice, we've got three stars in the table, 54, 57 and 60. I'm in attitude when we clear the table and get these two stars, 27 and 54.

CAPCOM That's affirm. And we're about 15 seconds to LOS, we'll see you over the States in 2 minutes.

SPACECRAFT Okay.

CAPCOM Challenger, Houston with you at Buckhorn for 8 minutes.

SPACECRAFT Roger Houston, and I've got a question about the IMU align attitude and the COAS cal.

CAPCOM Go ahead.

SPACECRAFT On page 4-2 of the CAP, I'm in the (garble) star-tracker align attitude I believe. It shows the, we've gotten a star number 54 in the table, we've got a star presence still on the -Z. I do not have a star presence on the -Y, and have not gotten star 27 in the table, and I'm showing that we're right in attitude and within the availability time.

CAPCOM Okay stand by. Okay we'd like to recommend star para Charlie 2, Dick.

SPACECRAFT Okay stand by. Okay Houston, we'll type in the maneuver to dual startracker attitude for Charlie attitude set 2.

CAPCOM Affirm Dick. And Challenger, Houston, if you don't have an opportunity this pass for the COAS CAL, we've got an opportunity on the next night pass for it.

SPACECRAFT Okay. If we don't get it here you want us to just remain in the IMU align attitude and wait til the next night pass?

CAPCOM If you don't have time for the COAS, we'd like for you to go back to -ZLV please.

SPACECRAFT Okay. Okay, that worked real well, we've got the two stars on table, we're continuing.

CAPCOM Roger copy.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t16j 242:09:38 8/30/83 PAGE 1

SPACECRAFT Okay, that worked real well, we got the 2 stars on table, we're continuing.

CAPCOM Roger, copy. Challenger, Houston, we're 15 seconds to LOS so it will be about a minute keyhole before we get you at Mila.

SPACECRAFT Roger.

CAPCOM Challenger, Houston back with you through Mila for 7 minutes.

SPACECRAFT Hello Houston, Challenger, MS1 here.

CAPCOM Loud and clea, Dale.

SPACECRAFT I know you haven't heard from me, but I've been pretty busy, just got my WCCU on and everything's going fine. Guy is busy calling up some numbers on the CFES that we'll be passing down to you in a second. Dr. Bill is busy doing his stuff and Dan and Dick are upstairs where it's real dark and I can't tell you what they're doing.

CAPCOM 10-4.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead, Dick.

SPACECRAFT Okay, we got a good alignment, I'll give you the numbers when we get through messing with the COAS CAL, we're just fiddeling with the lighting, trying to make sure we're looking at the right Star.

CAPCOM Okay, we've got the numbers down here, Dick.

SPACECRAFT Okay stand by.

CAPCOM And Challenger, Houston the Emerald Team will be handling over to the Crystal Team at this time, thanks for the good work.

SPACECRAFT Roger Houston, and the only thing that I'm really sorry with your team is that we haven't had time to describe the way we saw the ascent, because it was absolutely incredible sight and before it gets too dim in our minds I want to tell you about it. Right and the ascent was a lot better than the Richmond nominal.

PAO Mission Control Houston, handover from Merritt Island launch area ground station to TDRS tracking satellite at Mila loss of signal. Flight Director Jay Greene will have his

STS-8 AIR/GROUND TRANSCRIPT t16j 242:09:38 8/30/83 PAGE 2

change of shift press conference in the JSC briefing room. At 5:30 Central Daylight Time, 5:30 a.m., Mission Control Houston.

CAPCOM Stand by. Challenger, Houston, we're going LOS Mila, we're try to pick you up here with the TDRS, if we don't get you we'll see you at Ascension at 2 + 31.

SPACECRAFT Okay. And Houston, roger, this is really funny, just as we started to take the COAS CAL, a shower of ice particles that is coming out from the area, the engine bells in the aft starting out and we did get it but the Star is a dimmer then every piece of ice out there except that it's inertial and all of them are moving.

CAPCOM Roger that. Challenger, Houston with you at TDRS, how do you read?

SPACECRAFT Loud and clea, Houston.

CAPCOM Roger, and we're reading you loud and clear.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead.

SPACECRAFT Okay let's talk briefly about the COAS CAL. Did you copy my last transmission about all the ice?

CAPCOM Roger, we did.

SPACECRAFT Okay, we got a mark, we updated, the original delta bias was 0.7, I repeated the mark and have a delta bias of .14 and remembering the STS-7 events that Crip did, would you like me to repeat it again? We're in daylight now but I believe I can do it real quick, so my question is, do you want me to do it by the book, and that is repeat step 3 and see if we can get the delta bias less then .1...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t17j 242:09:54 8/30/83 PAGE 1

SPACECRAFT . . . the events that Crip did. Would you like for me to repeat it again? We are in daylight now but I believe I can do it real quick so my question is do you want me to do it by the book. That is repeat step 3 and see if we can get the delta bias less than .12.

CAPCOM Roger, Richard we would like you to do that.

SPACECRAFT Wilco.

SPACECRAFT Houston, CBR, now the sun is just too far up and it's too bright for me to get another mark so I guess if you like, we'll go back to ZLV and you can schedule the COAS CAL at your convenience.

CAPCOM Roger, stand by one, Richard and I'll get back to you.

SPACECRAFT Okay, I'm going to be unable to complete it with the lighting the way it is now.

CAPCOM Roger, Richard, you are go for going back to ZLV.

SPACECRAFT Wilco, and John, understand you do not need any information about the IMU alignment. Is that correct?

CAPCOM That's affirmative, Richard.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead.

SPACECRAFT We've just completed the system's status check on the CFES and we had a lot of (garble) parameters and we're presently in the voltage check. And we do have 4 parameters we would like to read down to you please.

CAPCOM Okay, we're ready to copy, Guy, go ahead.

SPACECRAFT Okay, delta P1 is 0.22, delta P2 is 1.7, delta P3 is -0.9 and delta P4 is -0.3.

CAPCOM Roger, Guy if you could repeat delta P4, please.

SPACECRAFT Roger, delta P4 is -0.3.

CAPCOM Roger, we copy. Thank you very much, Guy.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead, Richard.

STS-8 AIR/GROUND TRANSCRIPT t17j 242:09:54 8/30/83 PAGE 2

SPACECRAFT Roger, I believe I've done the PCS1 config with the exception of the mission note that you read me. You might take a look at the configuration as we go on and see if you like it. We have got alot of guys around here bumping around and doing alot of things and but I think I got it set up okay. And if you would check it, I would appreciate it and we're about to do the aft controller checkout.

CAPCOM Roger, Richard, we'll watch it for you and ready for the aft controller checkout.

SPACECRAFT Okay. Houston, Challenger.

CAPCOM Roger, go ahead.

SPACECRAFT Yeah, I just called out SPEC 68 to figure out my delta volts and those fuel cell 2, the H2 flow is off scale low, doing decimal 1.

CAPCOM Roger, Dan, that's a follow on from last flight, the system is okay.

SPACECRAFT Roger, copy, thanks.

END OF TAPE

CAPCOM Roger, go ahead Richard.

SPACECRAFT Roger, (garble) the CAP is complete and I'm going down for my doctor's appointment with doctor Bill.

CAPCOM Roger that Richard. And Challenger Houston, just for your information, you will not have to repeat the COAS CAL, GNC has looked at the data and you look good and further more just for your information, the attitude published in the CAP for the IMU align was not correct, but your IMU's look good and your COAS CAL is good. And Challenger, Houston, did you read our last transmission?

SPACECRAFT Roger, Houston, CDR answered, you probably didn't hear him. Understand we won't have to do a COAS CAL.

CAPCOM That's affirmative Dan and there was a wrong attitude on your IMU align published in the CAP.

SPACECRAFT You bet, we found it.

CAPCOM Roger, good catch on you guys part and we're going LOS Botswana here in 20 seconds, we'll see you at Guam at 4 plus 15, Dan.

SPACECRAFT See you there.

PAO This is Mission Control Houston, loss of signal at Botswana and also shortly prior to that, loss of signal through TDRS satellite. Having a little intermittent loss of data through TDRS, comes back again. Likely because of divergence in attitude on the antenna alignment on the Orbiter. Next station 23 minutes from now is Guam. At 3 hours 51 minutes mission elapsed time, mission control Houston. This is Mission Control Houston, 30 seconds to acquisition of Challenger through Guam tracking station. On orbit number 4 of STS-8, everything going nominally as we say in the space speak. We have acquisition at this time.

CAPCOM Challenger, Houston's with you at Guam for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear, John.

SPACECRAFT And Houston, CDR, I'm just getting back to fixing the DAPS up, I think we're in A1, B1, you might check.

CAPCOM Okay, we'll look at it for you. Challenger, Houston, we're happy with your DAP, it looks good.

SPACECRAFT Okie-dok. And Houston, CDR.

STS-8 AIR/GROUND TRANSCRIPT t18j 242:10:15 8/30/83 PAGE 2

CAPCOM Roger, go ahead Richard.

SPACECRAFT Roger, John, that COAS CAL was...

END OF TAPE

CAPCOM Roger, John, that COAS CAL was so darn rushed that sometime latter on in the mission if things get quiet and we've got a chance to do another one, if it didn't use too much gas after an IMU align or something, I'd kind of like to do it because we were coming up on sunset there and I just didn't really get to evaluate it very much although it went okay. And just as I was getting ready to do the marks this huge beautiful shower of ice came up and I could barely see the star.

CAPCOM Roger, we understand Richard and we'll put it in the timeline for you. Challenger, Houston, we're going to be going LOS here at Guam in 50 seconds and just a note for you. On the CAP, on page 4-2, we're going to be delaying our call for the APU, shutting it off, we want to let it go for a while. We'll let you know in a couple of REV's when that will be.

SPACECRAFT Okay, copy.

CAPCOM And we'll see you in Hawaii, Dan, in 8 minutes.

SPACECRAFT See you there.

CAPCOM Challenger, Houston with you at Hawaii for 7 minutes. And when you have the opportunity we'd like a G&C SPEC 1, please.

SPACECRAFT Okay Houston, reading you loud and clear, and you'll have it, the G&C on CRT 2.

CAPCOM Roger that, thanks, Dan.

SPACECRAFT And for your info Houston, I think Guy's working CFES and the rest of us are chowing down.

CAPCOM Roger, we copy, Dan. How's the chow?

SPACECRAFT Well bagging those sandwiches was a darn good idea because you don't have to mess around with setting up any food trays and stuff, and you get done in a hurry and stay ahead.

CAPCOM Roger that Dan, glad it's working out. And Challenger, Houston, CRT is yours again, thank you very much.

SPACECRAFT Okay. Houston, Challenger, the (garble) light and the fire detection system tests all went perfect with no nominalies.

CAPCOM Roger we copy Dan.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead Richard.

STS-8 AIR/GROUND TRANSCRIPT t19j 242:10:49 8/30/83 PAGE 2

SPACECRAFT John, Dan and I just happened to have a, we both up on the flight deck grabbing a sandwich here, thought it might be a good time to, for each of us to tell you what we saw out the windows doing ascent while it's fresh on our minds. But I do have one question, since it was pitch black dark when we left, sorry for laughing, we're learning something about liquid dynamics in zero-g with Dan drinking a glass of water. The thing that we didn't know was what the weather conditions were. Did we lift-off through a high overcast or was it clear skies, or what?

CAPCOM Richard at the time of launch we think the weather was pretty clear.

END OF TAPE

CAPCOM Richard at the time of launch, we think the weather was pretty clear.

SPACECRAFT Okay, well if you got a couple of minutes then let us tell you what we saw out the window while it's fresh in our mind.

CAPCOM Roger, we're ready to copy.

SPACECRAFT Okay, first me, right at lift off, as a matter of fact when the main engine started, I could see the reflections from the main engine exhaust all over the tower and then it became much, much, much brighter when the solid's lit. And as soon as we were away from the tower and began to rise, the entire front windows, it looked like you were driving through a fog bank except that there was an internal orange light source within the fog bank in other words you couldn't see anything because of the light and that continued, it got brighter and brighter and continued all the way through the SRB burn although toward the right, toward the end of this SRB burn it did diminish somewhat and then at SRB separation, the light from the second solid rocket motors was about 500 times more than I remember on STS-2. Then throughout the second stage, I'm not sure how to describe it, but I continued to see what looked like flashes of light that I assumed was reflected from the main engine ignition off the external tank and that continued all the way through second stage right up to MECO and MECO for a few seconds everything went black but then when tank separation occurred, where as in the daylight the only indication we ever had was that the lights went out. When tank separation occurred again, we were just, it seemed like surrounded by, by flame until the Z translation was complete and as a matter of fact somewhere in there I think I reached the stick and called the tank separation had occurred and I'm wondering did I interrupt the z translation? Over. You can save that last question for last, I just don't know whether I did or not. But if you have any questions about that, go ahead and I'll let Dan describe his opinions on it.

SPACECRAFT I think we could said it all pretty good, we talked about it on the way up and I didn't see (garble) initial light off cause I was pretty busy looking at things in the cockpit but once we got up and away a little bit it was like looking as you describe in the fog situation and the SRB sep, was the inside of a bomb fire, that was a real experience and we saw the same thing reflecting off the tank and the main engines all the way up to MECO. Bill's unavailable right now but he was looking out the back window, the overhead window and he was saying he could see something too, so we'll let him describe that to you later.

CAPCOM Okay, well we really thank you for that description, if you want to give us more, we're going to go LOS here at Hawaii and we're going to try a TDRS handover.

STS-8 AIR/GROUND TRANSCRIPT t20j 242:11:04 8/30/83 PAGE 2

SPACECRAFT Okay, we'll see you there.

CAPCOM And Challenger, Houston, we're back with you with TDRS.

SPACECRAFT Roger, Houston, you're loud and clear.

CAPCOM And Richard, the ascent team did not pass anything on to us about the fact that maybe you interrupted the translation, we feel that if you had, they would have mentioned it to us, but we will check into it for you.

SPACECRAFT Okay, I tell you the reason that I, I was surprised by the amount of flame that we were, seemed to be surrounded in during the separation and it looked like we got off attitude a bit, however, I have no reason to believe that I did knock it out, it's just that there was so much fire around the windows that I thought maybe I had bumped it.

CAPCOM Okay, we copy.

SPACECRAFT At any rate, at any rate, I guess my point is that on night launches, where in the daytime you have to watch for the red lights to go out to know that the tank is separated, not to...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t21j 242:11:10 8/30/83 PAGE 1

SPACECRAFT I said I thought maybe I had bumped it.

CAPCOM Okay we copy.

SPACECRAFT At any rate it, at any rate I guess my point is that on night launches, whereas in the daytime you have to watch for the red lights to go out to know that the tank is separated, not to worry at night, you're going to know about it because as Dan says it looks like you're in the middle of a bonfire.

CAPCOM Roger, copy that.

SPACECRAFT I guess the final thing that I would point out is that the vibration seem to be on the first stage a little bit less then I remember, although that very well might be explained just because I'd thought about it previously. I did feel some vibrations all the way through second stage that I don't really remember from the Columbia, although they were very, very low level and no, no bother at all.

CAPCOM Okay we copy that, Richard.

SPACECRAFT And finally one last thing, because of the lighting conditions we never had an opportunity to see any debris at all during (garble).

CAPCOM Understand.

SPACECRAFT Okay.

CAPCOM And thank you very much for all the good words on that ascent. Sounds like you guys had quiet a fiery ride.

SPACECRAFT (Garble). Houston, CDR.

CAPCOM Roger, go ahead, Richard.

SPACECRAFT John, where are we right now?

CAPCOM Roger, you're coming over the coast of Mexico.

SPACECRAFT Well I'll tell you what, it's getting wet down there, cause you know on STS-2 we had a hard time finding thunderstorms and I bet you that Dan and I are looking at 50 right now.

CAPCOM Roger, understand.

SPACECRAFT Just that area that we just passed over, oh in the last 30 seconds, as a matter of fact directly below us now is a large area of very active lightning and thunderstorm activity.

CAPCOM Okay, thank you very much, Richard.

SPACECRAFT Must be just about day break in Houston isn't it John, cause the sun just came up on us?

CAPCOM Roger, we don't have any windows, Richard.

SPACECRAFT Oh yes.

CAPCOM And Richard, likely it looks like you could be looking at Barry down there.

SPACECRAFT By golly, you know, it might be, you might plot it, but I just happened to glance out the window and the lights were on in the cockpit so we real quick turned out the flight deck lights and we're just looking straight down, vertically on a huge cluster of thunderstorms. Like I say, I bet there were 50 there in the field of view in this window.

CAPCOM Roger, thanks very much Richard. And Challenger, Houston, if you have a minute I have a slight change on the CAP for you.

SPACECRAFT Roger, John go ahead.

CAPCOM Okay on page 4-3 Richard, up in the area of 6 hours MET, the block there that's the photo opportunity, we would like you to change it from 548 to 554 which you have. Replace that with 547 to 552.

SPACECRAFT Roger understand, 547 to 552.

CAPCOM Roger, good readback.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead.

SPACECRAFT Rog, with reference to CFES, we have in the process a change out of sample one with MET time 4 hours and 51 minutes.

CAPCOM Roger we copy Guy, thanks very much.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t23j 242:11:32 8/30/83 PAGE 1

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead.

SPACECRAFT Rog, we're in the process of stabilize sample flow and sample 1 and we got a record filled message on the CFES and the read out is charlie 400. (Garble).

CAPCOM Roger, we copy that Guy, thank you, we'll look at it.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead.

SPACECRAFT Rog, we called up pressure 2 on the CFES and it's fluctuating between 3.7 and 4.1.

CAPCOM Okay, we have that, Guy, thank you and we're looking at your message and trying to figure out what the situation could be there.

SPACECRAFT Roger.

CAPCOM And, Guy, just for your information, when you get that message that you reported, all it means is that you've just used up the allocated space in memory and there's no problem at all with that and just go ahead and proceed.

SPACECRAFT Roger, understand, (garble).

CAPCOM And Challenger, Houston, we're going to be sending you a new state vector and we're going to be sending up an update of excelerometer biases.

SPACECRAFT Roger, Houston.

CAPCOM And Challenger, Houston, I have a couple of notes when you're ready.

SPACECRAFT Ready, John, go ahead.

CAPCOM Okay, Richard, just want to verify that in your maneuver to the tail glow experiment that you're on universal pointing with your load.

SPACECRAFT I'm not sure I understand the question, I've got the maneuvers set up 2-1 and 2-70 but I haven't initiated it yet.

CAPCOM Okay, we had just noticed on the ground that on spec 20 you were loading the time, maneuver time on spec 20, but as long as you have that correct, that's fine.

SPACECRAFT Remind me to show up, up here to start the maneuver.

SPACECRAFT And Houston, MS1.

CAPCOM Roger, and if you could just check your DAP A1 configuration before starting the maneuver please.

SPACECRAFT Okay, I'll recheck them both right now, John.

SPACECRAFT John, MS1.

CAPCOM Roger, go ahead, Dale.

SPACECRAFT Rog, just getting ready to get our calculator going here for AOS, have you sent that vector up already.

CAPCOM Roger, it is onboard, Dale.

SPACECRAFT Thank you, much.

CAPCOM And Richard.

SPACECRAFT Houston. Roger, Houston, CDR, I think I've got A1 and B1 loaded correctly in the DAP, if you see anything different let me know and we can check it out.

CAPCOM Okay, we will Richard, stand by 1. And Richard we can not confirm what is actually loaded if you have the right thing loaded and you see that, then you're okay.

SPACECRAFT Roger.

CAPCOM And just a reminder...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t24j 242:11:45 8/30/83 PAGE 1

CAPCOM And Richard, we cannot confirm what is actually loaded. If you have the right thing loaded and you see that, then you're okay.

SPACECRAFT Roger.

CAPCOM And just a reminder, when you have a moment, to go back to the STAR track mode.

SPACECRAFT Wilco.

CAPCOM And Challenger, Houston. Just one more item; you are now go for APU cooloff.

SPACECRAFT Okay.

SPACECRAFT Houston, Challenger.

CAPCOM Roger.

SPACECRAFT Rog, in setting up this experiment in the back OPS through the aft windows, we're get a moisture buildup in the center of both aft windows.

CAPCOM Okay. We copy that, Guy.

SPACECRAFT I'd say and W9 looks like a moisture circle of about 2 in. diameter, and in W10, it looks like a moisture circle of about 3 to 4 in. diameter.

CAPCOM Okay. Thank you very much, Guy, and is that located - - in what area of the window?

SPACECRAFT It's located in the center of both windows.

CAPCOM Okay. Thanks very much.

SPACECRAFT And John, a favor if you could, please. Could you tell us what the GMT of liftoff was?

CAPCOM Roger. Standby one. Okay Dale, it's 242 days, 06 hours, 32 min, and 00 sec. And Challenger, Houston. Did you copy the GMT of launch?

CAPCOM Challenger, Houston's with you at Botswana for 7 min and, Dale, did you copy the GMT launch time I passed up?

SPACECRAFT No John, you cut out right after you said Dale.

CAPCOM Okay. Here it goes - - 242 days, 06 hours, 32 min, 00 sec.

STS-8 AIR/GROUND TRANSCRIPT t24j 242:11:45 8/30/83 PAGE 2

SPACECRAFT Okay. So it looks like we were 17 min late right on the nose, ah?

CAPCOM Roger that, Dale.

SPACECRAFT Okay. Thanks a lot. And John, MS1, I've got a couple of seconds here if you want to hear the description of the ascent looking out the overhead window looking back?

CAPCOM Okay. We're ready to copy, Dale.

SPACECRAFT Okay. It was pretty surprising. I looked back for ignition of the SSME's and for the SRB's and darn near blinded myself. I looked back forward again and sometime around SRB SEP, looked back and it looked like we were just totally enveloped in a ball of flames. I guess it was the light reflecting off aerosols in the air or whatever, but the flame appeared to be all around us and like we were in the center. Later on, at 6 or 7 min, I again turned around and looked back and was really surprised. I didn't expect to see much but saw quite a bit, as a matter of fact. Just the main engines themselves were making a much brighter orange flame than I ever expected and it was pulsating almost as if an engine were running back there unstable, and in fact, I asked Dan if all the engines looked okay, and the flame was - - I would say, going out at least 45 - 50 degrees half coned all around the vehicle..

END OF TAPE

SPACECRAFT - - making a much brighter, orange flame than I ever expected and it was pulsating almost as if an engine were running back there unstable. In fact, I asked Dan if all the engines looked okay, and the flame was, I would say, going down at least 45 - 50 deg half coned all around the vehicle and pulsating. The last thing I remember was ET SEP which was the biggest surprise of all. It looked like we were inside of a ball of flame for about 15 sec there, in fact, that looked like it was never going to stop. That really surprised us.

CAPCOM Understand that, Dale.

SPACECRAFT It was quite a ride, Chuck.

CAPCOM Sounds like it. We've really enjoyed listening to your descriptions of that ascent, both Richard's and Dan's, as well as yours. Do you have any other comments on it, Dale?

SPACECRAFT I guess the bottom line is, you've already figured out from the three of us talking, is that the night situation is really different from a visual standpoint based upon what Dick has seen before and what we've all heard from the other folks. It's a whole different ballgame.

CAPCOM Roger that.

SPACECRAFT But it was fun.

CAPCOM Rog.

PAO Challenger, Houston. We're 40 sec LOS here at Botswana. We'll see you at Guam at 5 plus 51.

SPACECRAFT This is Challenger.

CAPCOM Roger. Go ahead.

SPACECRAFT We're in the insert collector portion of the CFES operation sample 1 and flow 7 is reading 261 volts, and we're proceeding on.

CAPCOM Roger that, and we're going LOS now. We'll see you at Guam.

PAO This is Mission Control, Houston. Loss of signal at Botswana. Next station in 24 min is Guam. During this TDRS pass across the western hemisphere on 4th orbit. Mission Specialist, Guy Bluford, reported several times on his activities in doing sample number 1 of the Continuous Flow Electrophoresis Experiment System, and that he'd completed changeout of sample number 1 and had it stabilized. Meanwhile, his crewmates were chowing down on box lunches of sandwiches that had been stowed so

that early on day 1 they wouldn't have to fuss around with the food warmer, unpack all of the food pouches from the lockers in the middeck. Guam in 23 min. Mission Control, Houston at 5 hrs, 28 min Mission Elapsed Time.

CAPCOM Challenger, Houston's with you at Guam for 7 min.

SPACECRAFT Okay, Houston. Read you loud and clear.

CAPCOM Roger, Challenger, and we're reading you loud and clear as well.

SPACECRAFT Okay. We're in the process of the Tail Glow experiment at this time.

CAPCOM Roger. Copy that. The Tail Glow experiment.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead, Richard.

CAPCOM Challenger, Houston. Go ahead.

SPACECRAFT Roger, Houston. CDR is apparently having a little trouble with his WTCU again. He was just trying to check out his comm. Apparently you can hear him but he can't hear you.

CAPCOM Understand, Dan.

SPACECRAFT And Houston, we just completed trying to get through some of that Glow experiment. That camera rig in the window doesn't work real good. You can't aim it high enough and we spent a lot of time trying to get the tail end of the ...

END OF TAPE

SPACECRAFT - - and Houston, we just completed trying to get through some of that Glow experiment. That camera rig in the window doesn't work real good. You can't aim it high enough and we spent a lot of our time trying to get the tail aimed in the camera right, so I think between now and the next time we're going to try this, which is on our extra day, we are going to try and invent something better to hold that camera so we can aim it up high enough to get the tail and be ready to go. We didn't get completely through the sequence.

CAPCOM Okay. We copy that, Dan, and understand you'll try to work up a better way of putting the camera so you can get a better picture if we do the experiment again.

SPACECRAFT Right. We're going to sit down and write so we can remember exactly what we did and debrief this good and in the mean time, between now and when we do it next time, we're going to try and come up with a better idea so we can be ready to go and not waste our time just trying to get it aimed up and in position.

CAPCOM Okay. Sounds real good, Dan.

CAPCOM Challenger, Houston. We are going LOS here at Guam in 30 sec. We'll see you at Hawaii in 7 min.

SPACECRAFT Houston, CDR radio check.

CAPCOM Roger. We're reading you loud and clear, Richard. How us?

SPACECRAFT Houston, Challenger (garble)

CAPCOM Roger. Go ahead, Challenger. Houston.

SPACECRAFT Rog. Dick just called. I guess you didn't hear him. He's not hearing you, and he's still having problems with the comm.

CAPCOM Okay. We are reading him, and we're going LOS.

CAPCOM Challenger, Houston's with you at Hawaii for 7 min.

SPACECRAFT Roger, Houston. Read you loud and clear.

SPACECRAFT Houston, Challenger.

CAPCOM Roger. Go ahead.

SPACECRAFT (Garble) with the CFES. In the collection mode on sample 1 and we got 11 min elapsed in that particular mode and we have not gone - - the system status sample pump lights have not

gone out. They are still on and they're still moving forward. Still in light matrix F versus G.

CAPCOM Okay. We copy that, Guy. Standby one. And Challenger, Houston, when you have a moment, we're just kind of interested in the moisture on the aft windows and whether or not they blocked any of the filming of the Tail Glow experiment.

SPACECRAFT Negative, Houston. It was pretty much dissipated by the time we were ready to do the Glow, although on W10 where I was setting up, I did take a kleenex and wipe it off to get ahead of it because I wanted to get the window shade with the camera peaking through it set up, but on the other window it was gone by the time we were ready to do it, so it was up there for a while and then disappeared.

CAPCOM Okay, Dan. Thank you very much for that.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead, Dan.

SPACECRAFT Roger. I never got any words back. We're supposed to do that APU Thermal - - whatever it is at 2 hr and 30 min and the circ pump didn't come up to pressure and words were going to come back and nobody's ever said anything. The APU Thermal Conditioning Enable.

CAPCOM Roger. We know, Dan, and we have been working on a plan for that.

SPACECRAFT Okay. Just curious.

CAPCOM Yeah. When you're ready to copy, I'll tell you what we've come up with.

SPACECRAFT Okay. Standby a second. I guess I'm sorry I asked.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t27j 242:12:41 8/30/83 PAGE 1

SPACECRAFT Okay, Houston. We're ready to copy. Go ahead.

CAPCOM Okay, Dan. Just to start off with, overall we currently think, we don't know for certain yet, that your Hydraulic Circ Pump Number 2 inverter is bad, but we're still looking at the data, but you are certainly cleared to go ahead on orbit OPS page 1-2 if you want to open up that, and tell me when you're ready.

SPACECRAFT I'm there.

CAPCOM Okay, on that page, Dan, we'd like you to go ahead and do the Hydraulic Thermal Conditioning Enable procedure, except underneath the note, we would like you to delete the next three lines - - the Hydraulic Circ Pump 2, the Isol Valve 2, and the Circ Pump 2 - - those three steps - - delete them.

SPACECRAFT Okay, just delete the enable for Circ Pump Number 2 and do it for 3 and 1.

CAPCOM That's affirmative, Dan, and you're clear to go ahead and do that.

SPACECRAFT Okay. It's in work.

CAPCOM And, Challenger, Houston. We're hearing voice on air-to-ground 2. We would just like you to verify that you have the orbit comm configuration set up and just make certain that the teleprinter is on. We're going LOS here at Hawaii in 19 sec.

SPACECRAFT Roger. We'll give a check.

CAPCOM And Dan, we'll give you a call when we pick you up on TDRS.

SPACECRAFT Roger, Houston.

CAPCOM And Challenger, Houston. We're with you with TDRS and, Guy, reference your question, we think it will reverse - - in a while. You can go ahead and just let it run.

SPACECRAFT Roger. Understand. We've got 4 minutes to go in the collection cycle and it's still in forward mode. We'll just continue on.

CAPCOM Roger that, Guy.

SPACECRAFT Okay, Houston. I went through the Hydraulic Thermal Conditioning with your deletions and Circ Pump Number 3 came up to 150. I got the landing gear Hydraulic Isol Valve open and configured the other 2 switches. Be advised, I left Circ Pump Number 2 in the OFF position - off.

CAPCOM Roger. We copy, Dan.

CAPCOM And Dan, you are in the proper configurations.

SPACECRAFT Okay. Thanks.

SPACECRAFT Houston, Challenger.

CAPCOM Roger. Go ahead Challenger, Houston.

SPACECRAFT Hey John, we need to have the CFES guys work a question for us, please. We just pulled off the collector from Tray 1. We want to shake it. Unfortunately on top, on the orange septum on top, there's a lot of moisture. We'd like to be able to wipe it off first so we don't end up with a cockpit full of a thousand drops. Can you get an answer to whether we can do that with a clean wipe and not contaminate the sample?

CAPCOM Okay. Standby one, Dale. We'll get it for you.

SPACECRAFT Thank you.

CAPCOM Roger, Dale. You're clear to go ahead and try to wipe it off with a clean wipe.

SPACECRAFT Okay, we've got a clean, dry wipe and we'll just blot it off and get her in the cooler.

CAPCOM Roger. The payload folks think that's okay.

SPACECRAFT Thank you.

CAPCOM And Challenger, Houston. If we could - - when you have a moment, if you could comment on whether or not the pump light went to reverse. You hadn't commented on that.

SPACECRAFT Okay. What happened was when we got to the end of collect and as soon as the message remove collector seal plate up came on, then the sample pump went immediately from forward to reverse. Looks like we got some kind of a logic problem in there and the processor just didn't stop the pump going forward.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t28j 242:12:53 8/30/83 PAGE 1

SPACECRAFT - - the message remove collector seal plate up came on, then the sample pump went immediately from forward to reverse. Looks like we've got some kind of a logic problem in there and the processor just didn't stop the pump going forward.

CAPCOM Okay. We copy that, Dale, and we'll look at it. Thanks for the catch.

SPACECRAFT Okay. We'll have a little time here before the next run. We have, lets see, 40 minutes and 40 - - it looks probably an 1 hr and a half at least, so you'll be able to work on it before we do the next collection.

CAPCOM Roger, that, and Dale, another question for you on the CFES to help us troubleshoot.

SPACECRAFT Yeah, go ahead.

CAPCOM Okay. Up until the time that it went into reverse, could you see the sample injecting into the column?

SPACECRAFT Negative. We could see the sample for the first 25 to 30 min coming up the column and then for the last, I'd say 15 to 20 min, we could not see any sample at all.

CAPCOM Understand. We'll help troubleshoot it further with that information. Thanks.

SPACECRAFT Okay. And also John, if you get out the payload data systems mal book, we think we found an error there that we've corrected on page 6-4. I'll wait for you to get there.

CAPCOM Okay. We're ready.

SPACECRAFT Okay, column hotel, we think that the first three under there should be OFF/ON/OFF.

CAPCOM Okay. We see that. Standby one. We'll take a look at it.

SPACECRAFT Okay. Do you want a mark, John, the reverse light just went OFF now on the sample pump with 32 min remaining in the flush.

CAPCOM Roger. We copy that, Dale. And, Dale, we have looked at the payload data systems mal book and we agree with you that your collection on column H is correct. It should be OFF/ON/OFF, and for your information, the reverse light behavior which you reported means that it is performing correctly.

SPACECRAFT Understand, John, and we've already made a copy of in our systems mal book.

STS-8 AIR/GROUND TRANSCRIPT t28j 242:12:53 8/30/83 PAGE 2

SPACECRAFT John, let me clarify that. It means it's performing correctly now during the flush where it goes reverse, but it did not perform correctly during the correct sequence. Is that right?

CAPCOM Roger, we know that it is performing correctly now, and we're still looking at whether or not its performance was correct in the forward sequence, Dale.

SPACECRAFT Okay, John. Thank you.

CAPCOM And Dale, just a note for you, you guys are really doing good today. You're on top of everything. We appreciate that.

SPACECRAFT (Garble) and we're getting cameras set up so you guys can have some Guy Bluford CFES show a little later here.

CAPCOM Roger that. We're looking forward to it. And Challenger, Houston, I have a little mal procedure we would like you to run on the Commander's comm problem when you're ready to copy.

SPACECRAFT Okay, Dick is not hearing you. What would you like us to do, John?

CAPCOM Okay, we have a little test procedure that we would like to call up to him or Dan, so that ya'll can do it at your convenience. When you're ready to copy the procedure, I'll give it up to you.

SPACECRAFT Okay. Standby. Okay, John, give Richard a short count to see if he can hear you on his speaker here. He wants to copy it himself.

CAPCOM Okay. Testing 1, 2, 3, 3, 2, 1.

SPACECRAFT Okay. I can barely hearing you, John. Go ahead.

CAPCOM Okay, Richard, and we're reading you loud and clear. What we - -

END OF TAPE

CAPCOM Okay, Richard, and we're reading you loud and clear. What we would like you to do, again, you can do this when you're out of comm with us, you can do it at anytime you want and then report the results back to us, is position yourself so you can see both a wall unit and a leg unit LED's.

SPACECRAFT (Garble) and I ran around and checked and I think the comm configuration should be all set up for the teleprinter.

CAPCOM Roger. We copy that, Dan, and, Richard, just a clarification to the first step I just gave you is that we would like you to position yourself so you can see both your wall unit and your leg unit LED's, and when your ready, I'll give you the second step.

SPACECRAFT Okay, John. He's all off comm. He's going to come up and tie into a leg unit and - - on HIU I mean, and so he can really talk to you, and then you can talk about it.

CAPCOM Roger. I understand, Dan.

SPACECRAFT Houston, CDR. How do you read?

CAPCOM Roger. Loud and clear, Richard.

SPACECRAFT Look at that.

SPACECRAFT Houston, Challenger.

CAPCOM Roger Challenger, Houston

SPACECRAFT Rog. We tried another record sealed on the CFES and it's record seal bravo zero zero zero.

CAPCOM Roger. Copy that, Guy. Record seal bravo zero zero zero.

SPACECRAFT Affirmative, Houston.

SPACECRAFT Houston, CDR. Do you read?

CAPCOM Roger, CDR. Houston reading you loud and clear

SPACECRAFT Okay. I am reading you loud and clear also. I think my problem may be in the very light-weight headset. I'll swap that out and I've been trying to troubleshoot to see what part of my equipment that the problem has been in, but at any rate, right now I am reading you loud and clear.

CAPCOM Roger. I understand, Richard. What we have is a little procedure to try and help you out with troubleshooting that, and I have a couple of steps here. First, if you could

position yourself so that you can see both your wall unit and your leg unit LED's.

SPACECRAFT Okay, I guess if you'd -- why don't you give me a chance, let me write down the procedure, and then do it when I am in a configuration that I can. Right now, I've been through two wall units, two batteries, and I'm finally working on Dan's headset, so if you'll let me just write it down, I'll try the procedure later.

CAPCOM Roger, and that's fine. We concur with that, Richard.

SPACECRAFT Houston, Challenger.

CAPCOM Roger. Go.

SPACECRAFT Roger. This is got another record seal again on the CFES with 9, 4, 0, 0, and also let me give you some readouts. On temp H, it's reading right now 0.5 decreasing and temp 9, it looks like it is 0.9 steady.

CAPCOM Roger. We copy that, Guy.

SPACECRAFT And Houston CDR. Go ahead with your procedure.

CAPCOM Okay, Richard. On the first step, position yourself so that you can see both your wall unit and your leg unit LED's.

END OF TAPE

CAPCOM - - Richard. On the first step, position yourself so that you can see both your wall unit and your leg unit LED's.

SPACECRAFT Okay. Go ahead.

CAPCOM Step 2. Have another crewmember give a test count.

SPACECRAFT Okay.

CAPCOM Step 3. During the test count, see whether or not you can see the LED on the wall unit or the leg unit, and then tell us what you saw.

SPACECRAFT Well, since it's going to be a while before I do this test, tell me the options of what I might see. Are you talking about a blinking red light or something.

CAPCOM That's affirmative, Richard. We're talking about whether or not you see the blinking red light on your wall unit and the leg unit during the test.

SPACECRAFT Okay. I'll do that later on (garble) and this one so that I can keep comm for a while.

CAPCOM Okay, Richard, and if you're ready I'll give you some of what you can expect, depending on what you see when you do the test.

SPACECRAFT Okay, John. Go ahead.

CAPCOM Okay. If you see both units flicker, the problem is in the headset. If you see both units don't flicker, the problem is in the wall unit. If you see the wall unit flicker but not the leg unit, the problem is in the leg unit and vice versa for the other possibility.

SPACECRAFT Roger, John. Let me read it back to you. If both of them blink simultaneously while the other person is giving me the count, it's the headset. If both are steady, it's the wall unit. If it's the wall unit flickering only, it's the leg unit that's bad and vice versa.

CAPCOM Roger, Richard. That's a good readback except I mistakenly told you the vice versa. The vice versa is not correct.

SPACECRAFT Okay. So it's the wall unit flickers only, it's the leg unit, period.

CAPCOM That's correct, and that's a good readback.

SPACECRAFT Okay. That sounds like a good procedure. Unfortunately, I'm afraid it's going to be a little while before I can get to it, but I will, cause Dale and I are starting the RMS activation. I mean the RMS work.

CAPCOM Roger. We understand, and that sounds like a good plan to us.

SPACECRAFT And John, I'm sure all of you are watching, but what I did while Richard was talking to you is, I did page 1-2 of the TDRS checklist, and now that he's back with us we're going to start on the table on top of page 1-3.

CAPCOM Roger that. Thank you, Dale.

SPACECRAFT Is all of you all set to go.

CAPCOM Roger. We're all ready.

SPACECRAFT Okay. We're going to start the activities.

SPACECRAFT Okay, John, Block 3 is done on 1-3. Everything was 2 motor timed.

CAPCOM Roger. We copy, Dale. Super.

SPACECRAFT And also John, we got TV set up for middeck experiment on 1.

CAPCOM Roger. Sounds good.

CAPCOM And Challenger, Houston, I have a small change to your TV pass coming up at Hawaii when you're ready to copy.

SPACECRAFT Houston, Challenger.

CAPCOM Roger. Go ahead.

SPACECRAFT Okay. We have a repeat of something that happened in STS-2. It must be Truly's fault. When we first came back to the RMS panel back earlier on, I didn't mention it, but the Isol 4 PDI, or not PDI, just the light on the matrix there had popped out. Must have done it during ascent. We pushed it back in and tested it. It's okay.

CAPCOM Roger. We copy that, Dale. Thank you.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t3lj 242:13:22 8/30/83 PAGE 1

SPACECRAFT ...(Garble) 4 PDI, or not PDI just the lights on the matrix there had popped out. Must have done it during ascent. We pushed it back in and tested it. It's okay.

CAPCOM Roger, we copy that Dale. Thank you.

SPACECRAFT Okay, and we're on page 2-2 just making sure all the cameras work there in step 2.

CAPCOM Roger, copy and when you're ready to copy we have a slight addition to your TV pass coming up at Hawaii.

SPACECRAFT Okay, do we need to write it down, John, or is it just something you can tell us.

CAPCOM It's something I can tell you.

SPACECRAFT Okay, go ahead.

CAPCOM Okay, we lost a little bit of the TV of the payload bay earlier and therefore, for the last couple of minutes of the Hawaii TV pass we would like you to switch to - or we will switch to the payload bay camera and if you could configure the payload bay floods for us prior to Hawaii we would appreciate it.

SPACECRAFT Okay, we'll do that.

SPACECRAFT (Garble)

CAPCOM Challenger, Houston's with you at Botswana for six minutes.

SPACECRAFT Roger, Houston. I read you loud and clear.

SPACECRAFT Still at the top of page 2-3.

CAPCOM Roger, copy that.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead.

SPACECRAFT Okay, we're through with sample 1 and we're getting ready to start sample 2. MET for sample 2 is 0 days, 6 hours and why don't you make it 59 minutes.

CAPCOM Roger, copy that Guy. Thanks a lot.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead Richard.

STS-8 AIR/GROUND TRANSCRIPT t3lj 242:13:22 8/30/83 PAGE 2

SPACECRAFT Okay, the RMS testing is going well. We're on page 2-4. We've tested the ineffector both in prime and backup. Dale is now doing the phasing checks using backup on all joints.

CAPCOM Roger, we copy Richard. Thanks.

CAPCOM Challenger, Houston. We're going LOS Botswana in 30 seconds. See you at Indian Ocean in a minute.

SPACECRAFT Roger, see you there.

CAPCOM Challenger, Houston with you at IOS for 5 minutes. How do you read?

CAPCOM Challenger, Houston's with you at IOS for 3 minutes. How do you read?

CAPCOM Challenger, Houston with you at IOS. How do you read?

CAPCOM Challenger, Houston with you at IOS for 2 and a half minutes.

CAPCOM Challenger, Houston with you at IOS. How do you read?

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t32j 242:13:40 8/30/83 Page 1

CAPCOM Challenger, Houston, with you at IOS for 2 and a half minutes.

CAPCOM Challenger, Houston, with you at IOS. How do you read?

SPACECRAFT Roger, Houston. Loud and clear.

CAPCOM Okay, Richard. We're with you for another 2 minutes. We've had some link up problems.

SPACECRAFT Okay. Dale and I have completed, or Dale has completed the RMS checkout and we're just at the top of page 3-2 to start the RMS powerdown.

CAPCOM Roger, copy that.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead, Richard.

SPACECRAFT Roger, John. I've been on and off comm although I'm in the same configuration that you saw me earlier. Has one of the guys reported the little Christmas tree of ice over the - to the right side of the tail like on STS-2?

CAPCOM Roger, I'll try to get that answer for you, Richard. Right now we're 30 seconds LOS. I'll see you at Guam at 7 plus 29.

SPACECRAFT I don't need the answer but at any rate, there was a little Christmas tree of ice coming out of one of the vents just to the right side of the tail at the base of the tail on STS-2 and on other flights too, I think, and it's out there now.

CAPCOM Roger, we understand then that's correct. We have seen those on other flights.

SPACECRAFT Okay, see you later.

PAO This is Mission Control, Houston. Loss of signal at Indian Ocean Station. Guam in 17 minutes and following that at Hawaii a television pass. A combination of cabin TV as well as flood lighted payload bay television. The crew of Challenger was winding down their testing of the remote manipulator system at LOS Indian Ocean Station. The checkout of the remote arm is on schedule and proceeding on time as are all other flight plan activities. And they're a little ahead of time on sample number 2 for the CFES experiment. Returning in 16 minutes at Guam. Mission Control, Houston at 7 hours, 12 minutes elapsed time.

PAO This is Mission Control, Houston. Less than a minute away from reacquisition at Guam. Brief gap across the Central Pacific from Guam over to Hawaii. We have acquisition at Guam at this time.

CAPCOM Challenger, Houston's with you at Guam for 4 minutes.

SPACECRAFT Roger, Houston. Loud and clear, John. How are you doing?

CAPCOM Doing real good and Richard, are you all done with your RMS powerdown now?

SPACECRAFT That's affirm. We just completed the powerdown. We encountered no failures. We did see a couple of dynamic things that I wanted to ask about when we get a second here. But we have completed the powerdown and the arm is back in and rolled in.

CAPCOM Roger, understand then. When you're ready, I have an attitude and some stars available for you which you can use later on this evening when you do your IMU align so that you can do a COAS count.

SPACECRAFT Okay, go ahead.

CAPCOM Okay, Richard down on ...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t33j 242:14:00 8/30/83 PAGE 1

SPACECRAFT (Garble) dynamic things that I've wanted to ask about when we get a second here, but we have completed the powerdown, and the arm is back in and rolled in.

CAPCOM Roger. Understand, and when you're ready, I have an attitude and some STARS available for you which you can use later on this evening when you do your IMU align so that you can do a COAS count.

SPACECRAFT Okay. Go ahead.

CAPCOM Okay, Richard, down on 4-3 of the count, to replace the little block from maneuver to the IMU align attitude, you can add to that slant COAS cal altitude. The attitude is roll 173.2, pitch 33.7, yaw 50.9.

SPACECRAFT Okay. Roll 173.2, pitch 33.7, yaw 50.9.

CAPCOM Roger, and use the A1 auto burn DAP and initiate the maneuver at 8 hr 45 min.

SPACECRAFT Okay. A1 auto burn and 8, 45 maneuver execute time.

CAPCOM Roger, and the minus Y STAR ID will be number 29, that's alcade, and that will be visible from 8 hr, 19 to 9 hr, 12. The minus Z will be number 22. That's altar, and that will be visible from 8 hr 30 to 9 hr 18.

SPACECRAFT Okay. Altar was 8:30 to 9:18. Was that correct?

CAPCOM That's affirmative.

SPACECRAFT Okay, and I understand you do want to get an IMU align, and then while we remain in attitude repeat the COAS cal based on my request. Is that right?

CAPCOM That's correct, Richard.

SPACECRAFT Okiedoke.

CAPCOM And I have one other item for you, Richard, when you're ready to copy.

SPACECRAFT Go ahead.

CAPCOM Okay, in the DAP book, Richard, on the DAP config B-5, there's an error in it. We would like you to change Item 17 to 0.016.

SPACECRAFT Okay. That's DAP bravo five discrete rate vernier, Item 17, 0.016.

STS-8 AIR/GROUND TRANSCRIPT t33j 242:14:00 8/30/83 PAGE 2

CAPCOM That's affirmative, Richard, and this change is good for the duration of your flight.

SPACECRAFT Okay. While I got it right here, let me change both DAP books before I forget it.

SPACECRAFT Houston, Challenger.

CAPCOM Roger. Go ahead, Challenger.

SPACECRAFT I understand you want to do a PAM S&E ASC thermal check over Hawaii. Affirmative?

CAPCOM Roger.

SPACECRAFT Rog. We'll set up for it.

CAPCOM Challenger, Houston. We're going LOS here at Guam in 15 sec. We'll see you at Hawaii in 7 min for the TV pass, and just a reminder for the lights on in the bay, please.

SPACECRAFT Roger. The payload bay lights are on and we're all set up, John, and sometime before the evening is over, remind Dale or me to ask you about a elbow dynamics the RMS that we just had a question about.

CAPCOM Roger that. Wilco.

PAO Mission Control, Houston. Loss of signal at Guam. Seven minutes across to Hawaii and TDRS satellite relay again, and, a TV pass with a mix of cabin activities as well as the payload bay cameras with a floodlighted payload bay. Commander, Dick Truly, reported that they had the remote arm stowed in its cradle, having completed the RMS powerdown checklist, and a brief exercise with the arm to make sure all of its joints and tendons work. Hawaii upcoming in a little over 5 min. At seven days, 35 minutes, Mission Control, Houston.

END OF TAPE

PAO ... move the arm to make sure all of its joints and tendons work. Hawaii upcoming in a little over 5 minutes. At 7 days, 35 minutes. Mission Control, Houston.

CAPCOM Challenger, Houston's with you at Hawaii with good video.

SPACECRAFT Roger, Houston. Read you loud and clear and we're getting ready to start the ASC thermal test.

CAPCOM Roger, we copy. And we have a good picture..

SPACECRAFT Okay, Guy just did the item 1 execute. You should be getting PAM data and I guess you're seeing the picture of the middeck. Is that true?

CAPCOM Roger, we're seeing Richard and Bill on the middeck.

SPACECRAFT Okay, let me tell you what we got down there. The flight deck camera is also available. That's the one looking over towards the CFES and we have the payload bay cameras all up and ready for you to look at those if you want.

CAPCOM Roger, we copy. Thank you, Dale.

SPACECRAFT And INCO's got it.

CAPCOM Roger, we have it. Thank you.

SPACECRAFT Okay, John. We're all going to wander down towards the middeck so you can see our smiling faces.

CAPCOM Roger, that and it looks like Richard's trying to give us a demonstration.

SPACECRAFT Richard's doing a doctor appointment. What he's doing is measuring him. Okay, there comes Guy down the port interdeck access. You can see that we've all grown some white spots on our foreheads.

CAPCOM Roger. We can see that.

SPACECRAFT And for those of you who don't know what those are, those are part of doctor Bills' experiments. There are three electrodes. One in the middle of the forehead and one by the right eye and the left eye which he wires us up when we do our EOG eye movement so he can record that stuff on his recorders. And that measuring device that you saw Richard working, I just got off of that and I'm already growing an inch on this mission so you get the Rockets ready with a contract for when I get back.

CAPCOM Roger, we copy that, Dan.

SPACECRAFT Okay, in the background behind Guy, you can see the CFES. He's right in the middle of sample 1, number 2 everything's been going really well on that. And also on the left still Hawaii coast pass, zooming in but you can see we have the hatch open and Dr. Bill has set up his doctor office and put the shingle up on the airlock.

CAPCOM Roger, we can see that, Dale and we have a good picture of Guy right now.

CAPCOM Dale, if you have a minute, if you're up on the flight deck, are you there?

SPACECRAFT John, I'm up on the flight deck. Dale's on his way down. Richard just came up, he's off comm. He also wants a Rocket contract, he grew an inch, too.

CAPCOM Okay. Dan, if you could call up spec 216 for us we'd like to check something on our data and give us a readout of the backup self test go whether there's an asterisk or not.

SPACECRAFT Okay, spec 216, just a second. Okay, what you're seeing now is Richard going sailing through the middeck and Dale is getting ready to do his measurements. Okay, I got 216 up now. What did you want me to check?

CAPCOM A read up - a readout of the backup self test go up in the upper left hand corner - whether or not there is an asterisk, Dan.

SPACECRAFT Yes, self test go, primary has an asterisk and so does backup.

CAPCOM Roger, thank you very much, Dan. That's all we need.

SPACECRAFT Okay, thanks for the help. That's about all I know about that system. Boy, John, you're really digging deep when you ask the PLT to look at a (garble) display.

CAPCOM Roger, it's a good picture of you Dale.

SPACECRAFT (Garble). Houston (garble)?

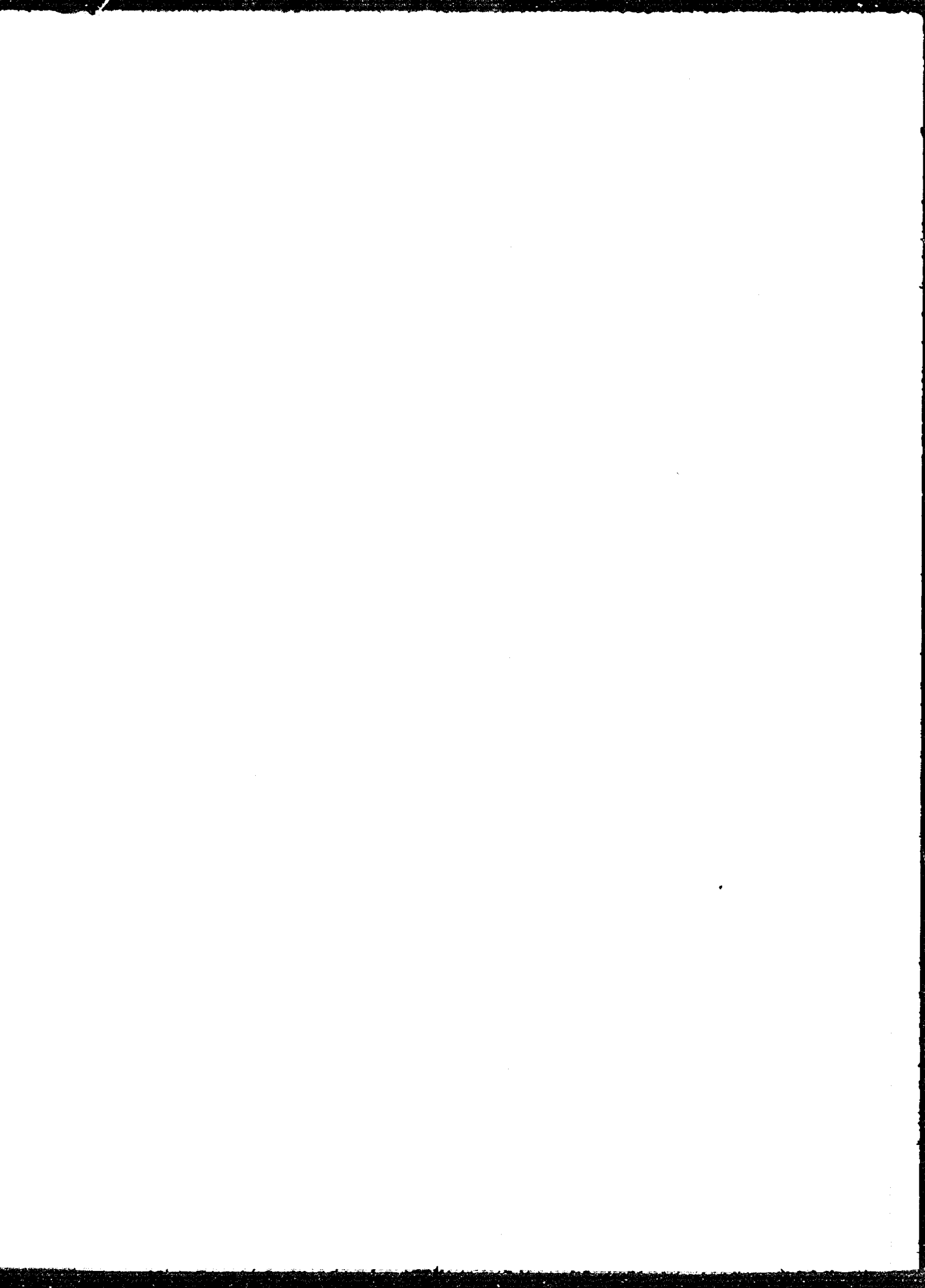
CAPCOM Roger, Dale. You're not coming through real clearly. Say again.

STS-8 AIR/GROUND TRANSCRIPT t34j 242:14:06 8/30/83 Page 3

SPACECRAFT Just asked you what Houston time was, John?

CAPCOM Oh, it's 9:15 in the morning.

END OF TAPE



SPACECRAFT Houston time?

CAPCOM Roger, Dale. You're not coming through real clearly. Say again.

SPACECRAFT Just asking what Houston time was, John.

CAPCOM Oh, it's 9:15 in the morning.

SPACECRAFT And here's the closeup over the patch for those of you that haven't seen it.

CAPCOM That STS-8 patch really looks good, Dale.

SPACECRAFT Now, Dr. Bill's going to smile for you.

CAPCOM Right. He looks great.

SPACECRAFT I'll tell you what, you ought to see this middeck (garble) never seen before.

SPACECRAFT Okay. Watch Dr. Bill. He's heading into his office now. If you get mad at him, we'll put him in there and close the hatch.

CAPCOM Roger. That really is super.

SPACECRAFT (Garble) this is the last member of our crew that you haven't seen so far. He's the one with the wild hair.

CAPCOM That looks good, Dan.

SPACECRAFT And he's showing you how he can eat a carrot, flying upside down or something. There goes the carrot.

SPACECRAFT The carrot just hit panel ML86V.

CAPCOM Okay, Challenger, Houston, we've gone ahead and switched the camera to the payload bay now.

SPACECRAFT Couldn't stand us anymore, huh?

SPACECRAFT Houston, we are going to get ready and powerdown the SCA at the end of the ASC terminal test. We're doing that now.

CAPCOM Roger that. We copy.

SPACECRAFT Are you on the elbow camera there now.

CAPCOM Roger. We are going LOS here at Hawaii, and we are going to be handing over to the TDRS, and we don't have any TV at all now, Challenger.

CAPCOM Challenger, Houston, with you through TDRS. How do you copy?

SPACECRAFT We got you loud and clear.

CAPCOM Dale, Richard mentioned earlier that you had some questions about the RMS elbow dynamics, if now would be a good time for you, we're ready to listen to them.

SPACECRAFT Just a minute. Let me get Richard on comm here because I think we both have some comments, and some relate to what he saw in STS-2, so just give us about 20 seconds, Fish.

CAPCOM Roger.

SPACECRAFT Okay, and I have powered off all the payload bay cameras and am shutting the system down.

CAPCOM Roger. We copy.

SPACECRAFT I guess you saw that we are having a good time up here today, Fish.

CAPCOM Look's like you guys are having a heck of a good time.

SPACECRAFT Things are really going well so far. No big suprisers.

CAPCOM Yeah, Dale. Everything looks real good down here too. You're having a super mission.

SPACECRAFT (garble)

CAPCOM Richard, you're a little broken. Why don't you give me another call here.

SPACECRAFT Okay, how about now? 1, 2, 3, 4, 5.

CAPCOM Okay. We have you loud and clear now. Go ahead.

SPACECRAFT Okay. The thing that I don't recall from STS-2 that I may have just forgotten is the hesitation in the elbow joint. Basically, we, well first of all, we, I had forgotten about the fact that the drop switch has to be made very firmly to each - -

END OF TAPE

CAPCOM Okay. We have you loud and clear now. Go ahead.

SPACECRAFT Okay. The thing that I don't recall from STS-2 that I may have just forgotten is a hesitation in the elbow joint. Basically we, well first of all we - - I had forgotten about the fact that the drop switch has to be made very firmly to each, the plus and the minus position, and so for a while we thought we weren't getting commands out, but actually it's the mechanical switch that's not like the simulator. But the thing that we saw that I didn't recall was the fact that when Dale was driving the elbow joint in course rate, it would drive for maybe 2 or 3 sec and then it would actually stop for a sec or so, and then it would pick up and move again for 2 or 3 sec and then slow down and almost stop, and just like that, as he moved it. And I think it might be good idea if you all looked at the data from the RMS checkout and just make sure that the joint movements, particularly the elbow, is to your liking.

CAPCOM Roger, Richard. We copy that and as soon as we know something we'll get back to you.

SPACECRAFT Okay. Let me hand it over to Dale.

SPACECRAFT Okay, Fish. The only other thing I think I have is that, and I think this is nominal, at least the simulator does it. One of the times when I selected port on the RMS select switch, we got, besides the reach limit and whatever else we get there, the seniority, we got a check CRT. It was positioned on coder check on the wrist roll joint. I just did the (garble) on the spec 94 reset and we pressed on, so I think that's nominal.

CAPCOM Challenger, Houston. Dale, that was expected. What we would like to know is if this occurred in single joint only.

SPACECRAFT You got me now, Fish. We were driving single joints during all that, so I'm probably 90 percent sure that's the case.

CAPCOM Okay. We're really referring to the elbow pauses that were mentioned. Was that noticed in the single joint only?

SPACECRAFT Well, elbow was the one that was most noticeable. I think we might have seen a little bit of it in shoulder pitch, but it certainly wasn't the dramatic start/stop that Richard described from the elbow pitch, and it was in single drive only.

CAPCOM Okay, Dale. We copy that and as soon as we know a little more we'll get back to you, but much of that is an expected result up there.

SPACECRAFT Okay. You know, we didn't do any driving in direct. We did do some in backup, but I don't think we really drove the elbow pitch joint enough in plus or minus to see the same effect that we saw in single.

CAPCOM Roger.

SPACECRAFT And we just got a, you probably saw, we just got a payload alert (garble) message which is nominal. That's 5 minutes after powerdown on the SCA.

CAPCOM Roger, Dale.

CAPCOM And Challenger, Houston. When you're ready, we have some questions for you on the Tail Glow Experiment that came up earlier.

SPACECRAFT Okay. Standby. We need to get Dan on here.

CAPCOM Roger.

SPACECRAFT (Garble) for your questions.

CAPCOM Okay, Dan. When you talked about the aiming problem that you had with the camera, was this caused by the window mount position or by window cover interference.

SPACECRAFT Bill, you're breaking up. Start your question from scratch again, please.

CAPCOM Roger. In reference to the Glow Experiment, was the intensifier aiming problem caused by camera mount position or window cover interference?

END OF TAPE

SPACECRAFT (Garble)

CAPCOM Challenger, Houston. How do you copy?

SPACECRAFT We got you loud and clear now.

CAPCOM Roger, Dan. Did you copy my first question on the Glow experiment?

SPACECRAFT No, Fish, you cut out and we haven't heard anything from you for about a min or so, when you cut out just as you started talking.

CAPCOM Roger, we've had some intermittent uplink and downlink problems with TDRS. The question number 1 is, was your intensifier aiming problem that you talked about caused by the camera mount position or by interference with the window cover?

SPACECRAFT Well, I think it's a portion of both. To tilt it up to get the picture you want, you stretch it against the top of the hood that goes into the window and, in fact, we had to rip it up from the bottom and put a couple of layers of tape down to keep the light out. And that is partially caused by the fact that the camera mount, you can't drop it low enough, it doesn't go but about a half a degree or so below horizontal, and those two things combined, and that took up trying to get the light leaks patched and get a reasonable aim on the picture took up most of our pass. You can't do anything like practice aiming it or anything until you turn the intensifier on, which you can't do until you get into the dark.

CAPCOM Roger, Dan. We understand. In view of that, on page 3-2 of the Orbit OPS checklist, can you give me an idea of which photos you were able to obtain?

SPACECRAFT Okay. Let me get that page out. I had it a second, but it floated away.

CAPCOM Roger. We'll stand by.

SPACECRAFT Fish, while he's doing that, where are we now? Are we coming up on South America?

CAPCOM You're a ways off. Looks like your about 10 min off from the coast, right.

SPACECRAFT Okay. Thank you.

SPACECRAFT Okay, Fish, on page Flight Supplement 3-2, we marched through the sequence (garble) where we just changed the shutter speed, then we got down and we got the jet firings, but I think we got a little mixed up in there, but we made it all the

way through the jet firing, and then by the time, we didn't have time to go back through them because we were coming in to - - out of the window, so then we tried to go and get some of the shopping list, the STAR photos, which STAR required a moon position, just darkness, and by the time we tried to get the camera aimed even higher, which was almost impossible, we were into daylight, so we couldn't do anything, so we shut it off.

CAPCOM Roger, Dan. We copy.

SPACECRAFT And I think our next time we're going to do this, so that actual tail one is on the extension day, the day 6, so we're going to, in our free time, sit down and try to invent a better way of mounting that camera in the window, and maybe do a little better.

CAPCOM Roger, Dan. We concur.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Okay, Fish, with reference to CFES, we're in the collection mode on sample 2. We've inserted the collector and the SEP voltage is 256, and we've got 81 min to go in the collect mode, or block X.

CAPCOM Roger, Guy. We copy.

CAPCOM And, Challenger, Houston, for Guy, I have a message for you on the CFES.

SPACECRAFT Go ahead, Fish.

CAPCOM Yeah, in reference to the questions you had earlier about the sample pump forward indication after your full sample injection, it looks like that the beads within the syringe that act as sample stirrers may have interfered with plunger travel in your syringe, and that would have happened at the end of sample infusion, and we think what this may have done is prevented the operation of the limit switch, so what happened,

END OF TAPE

CAPCOM (Garble) that active sample stirs may have interfered with plunger travel in your syringe and that would have happened at the end of sample infusion. And we think what this may have done is prevented the operation of the limit switch. So what happens here is the pump motor continues in a forward mode, the mechanical clutch will stop the plunger motion during this time, but the motor will continue until auto reverse occurs, and the message you would get at that time would be remove collector message. And we would expect that this situation may occur on all subsequent samples, but it should not effect nominal CFES OPS.

SPACECRAFT Dick, I only caught the last part of that, so you say we can essentially ignore that situation if it occurs in the remaining samples?

CAPCOM Roger, Dale. You can ignore that and you might expect it to occur on your subsequent CFES operations.

SPACECRAFT Okay, great. That's good news. We were worried something might be wrong there. Thanks a lot.

CAPCOM Roger, Dale.

SPACECRAFT (Garble) (garble)

SPACECRAFT No, no. We've got a few minutes of light and I wish you would.

CAPCOM Challenger, Houston. Challenger, Houston. Challenger, Houston, with you through Botswana for 7 min. How copy?

SPACECRAFT Houston, loud and clear.

CAPCOM Roger, Richard. We have you loud and clear. And Challenger, Houston. Just to let you know, we see you in free drift down here and when you're ready, I have a couple of quick messages to be done prior to sleep.

SPACECRAFT Yeah, standby, Houston. Roger, Bill. I don't know any explanation unless somebody just bumped the DAP switch. We're in pulse mode. I guess that's what happened.

CAPCOM Roger, Richard.

SPACECRAFT Okay, Houston, go ahead with the messages.

CAPCOM Right. There are just two. Number 1, we would like you to delete your supply water dump for this evening, and -

-
END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t39j 242:15:04 8/30/83 PAGE 1

SPACECRAFT Roger, Bill. I don't know any explanation, unless somebody just bumped the DAP switch. We were in pulse mode. I guess that's what happened.

CAPCOM Roger, Richard.

SPACECRAFT Okay, Houston, go ahead with the messages.

CAPCOM Right. There are just two. Number 1, we would like you to delete your supply of water dump for this evening, and finally, we would like you to perform manual cabin atmosphere management, and specifically that will be the set caution and warning limits section of the orbit OPS checklist, page 5-10.

SPACECRAFT Understand. You want us to delete the water dump and then do the manual cabin atmosphere management per 5-10.

CAPCOM Roger, Guy. Specifically, it's the block there entitled Set Caution and Warning Limits.

SPACECRAFT Roger. We got it. Thank you.

CAPCOM And Challenger, Houston. We show you in free drift again. Do you have an explanation for that?

SPACECRAFT Yeah. We did bump the -- okay, Houston. Yeah, I guess what we discovered was the aft flight controller power was on, which I didn't realize. I thought we had turned it off, and I guess somebody had bumped the stick back here, but I appreciate you telling us cause maybe that was it. I'm not sure.

CAPCOM Roger, Richard. We copy.

CAPCOM Challenger, Houston. We're 30 sec LOS. See you at Indian Ocean in 1 min.

SPACECRAFT Roger, Houston. See you there.

CAPCOM Challenger, Houston, with you through Indian Ocean for 8 min.

SPACECRAFT Roger, Houston. Loud and clear.

CAPCOM Roger. We have you loud and clear too.

SPACECRAFT And Houston, see you at (garble)

CAPCOM Houston, go ahead, Richard.

SPACECRAFT Roger, Fish. I haven't had time today to make a really careful assessment to see if there was any tile damage during the ascent. We briefly looked and there's certainly

nothing to be concerned about. There are 2 white tiles on the righthand OMS pod that have a dimple in them. Dan and I are looking at them. I would guess it's the surface dimple that's maybe a quarter of an inch deep. The color is white throughout and I guess the diameter is - - looks like ovals really, maybe an inch high and an inch and a half wide. We've looked briefly around the windows up in the cabin and there's 1 or 2 very miniscule chips of tile that are - - have just chipped off. But essentially, what we can see is in great shape and when we can either have time tomorrow to let you look at these OMS pods on TV or something, you can conclude the same thing for yourself the same thing, I think, and we'll be sure to take some pictures for the postflight.

CAPCOM Roger, Richard. That sounds good to us.

SPACECRAFT But in summary, it is very close to zero damage at all. We did notice there is some smearing on the windows and we'll try to document that, and as usual we picked up some crud at SRB-7 on all the front windows. But in general, no problems.

CAPCOM Roger, Richard. That's real good news.

SPACECRAFT Also, we've been able to see the ice crystals on the edge of the center engine. All day long, we've seen various chunks - - not chunks, but pieces of ice come off at various times and fly formation with us for awhile. The elevons have been, except for the left outboard, the elevons have been fairly close to fair all day. The left outboard seems to have drifted almost full up, or 3 quarters up, I would say.

CAPCOM Roger. We copy that.

SPACECRAFT Okay.

END OF TAPE

SPACECRAFT Okay. Also, Fish, we haven't, again, we haven't had a whole of time except in just spurts to look out the window and take pictures, but we have - - we saw the great Dike of Zimbabwe in between OMS1 and OMS2, and we've seen a number of ocean features, including eddies and internal waves and taken a few pictures of those, and just generally, a great time is being had by all.

CAPCOM Well, it sure looked like it on the TV pass. I wish I could be there with you.

SPACECRAFT You bet. Well, it is a lot of fun and it's been a good day so far, and I am getting ready to start this manual cabin atmosphere management if you want to get EECOM to keep me honest.

CAPCOM Roger, Richard. We'll watch it down here.

CAPCOM Challenger, Houston. We're 30 sec LOS. We'll see you next at Guam at 9 plus 08.

SPACECRAFT Roger.

PAO This is Mission Control, Houston. Loss of signal at Indian Ocean Station. Guam 20 min away, as the crew winds down in their first day in space, coming up on the sleep period which begins some 2 hr from now. However, the presleep activities, including the evening meal and all the other things that go with getting ready for bed. Dick Truly reported that some small indentions, what he calls dimples, roughly 1/4 in. deep and an inch and a half oval shape are visible on the white tiles on the righthand OMS pod, and he sees one small chip on the tiles near the front cabin windows. During this just completed orbit, we heard a new call sign for the first time. One of the CAPCOM's. The crew referred to him as Fish, and that, of course, refers to Dr. Bill Fischer. This is his first time out as CAPCOM. He's backup CAPCOM on the Orbit 1 team. We'll return at Guam in 18 min at 8 hr, 49 min Elapsed Time, Mission Control, Houston.

CAPCOM Challenger, Houston with you through Guam for 1 min, and we would like to GNC spec one for variable parameters.

SPACECRAFT It will be on 1.

CAPCOM Roger, Dan.

SPACECRAFT Rich is doing a COAS cal right now.

CAPCOM Roger. We copy.

STS-8 AIR/GROUND TRANSCRIPT t40j 242:15:13 8/30/83 PAGE 2

CAPCOM And Challenger, Houston, we're about 15 sec from probably losing you through a keyhole here. If we don't talk to you just out of keyhole, we'll see you in Hawaii in 8 min.

SPACECRAFT Okay. We'll see you there.

CAPCOM And Challenger, Houston, out of the keyhole for 40 more sec through Guam.

SPACECRAFT Okay.

SPACECRAFT And Houston, IMU align went very well. We have the numbers for you a little bit later when we get done with the COAS cal.

CAPCOM Roger. We copy, Dan. Good IMU align. And Challenger, Houston. CRT 1 is yours.

SPACECRAFT Okay. Thank you.

CAPCOM Challenger, Houston with you over Hawaii for 7 min. How copy?

SPACECRAFT Roger, Houston. Read you loud and clear.

CAPCOM And we've got you loud and clear.

SPACECRAFT And Fish, this is CDR. I got one good mark of the delta bias I think was .15, but the authority with these cultures is rated at so low that I am afraid that I am sitting here wasting gas - - just trying to maneuver the STAR.

CAPCOM Challenger, Houston. Roger, Richard. We concur, and you can go ahead and stop the operations at this time.

SPACECRAFT Okay,

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t41j 242:15:49 8/30/83 PAGE 1

SPACECRAFT And Fish, this is CDR. I'm - I got one good mark that delta (garble) I think was .15 but it's the - authority with these pulse rates are so low that I'm afraid I'm just sitting here wasting gas - just trying to maneuver this star.

CAPCOM Challenger, Houston. Roger, Richard we concur and you can go ahead and stop the operations at this time.

SPACECRAFT Okay, I'm satisfied (garble) it's obviously a doable job but it's the - these (garble) and the authorities are just so low that the star tends to not respond or the vehicle responds so slowly that it just takes many, many impulse inputs. And it's that star set is about to happen anyway so I think I'll just knock it off.

CAPCOM Roger, Richard. We copy that. Let us take a look at it and get back with you.

SPACECRAFT Okay, and would you like to have the IMU align data?

CAPCOM Richard, that's affirm. You can go ahead and read it down.

SPACECRAFT I'm sorry, say again.

CAPCOM Roger, Richard. We would like the IMU align data and we're ready to copy.

SPACECRAFT Okay, star is 29 and 22; angle air was 0.02; the delta angles for IMU 1 was -.000; delta y, +.10; delta z, -.22 IMU 2: -.02, +.01, -.06 IMU 3: +.01, -.01, -.23 Execute time was 0 days, 9 hours, 0 minutes and 57 seconds.

CAPCOM Roger, Richard. We copy.

CAPCOM Challenger, Houston. We'd like to get the GNC spec 1 and the resume on spec 60 please.

SPACECRAFT Roger, Houston. And GNC spec 1 is on CRT 2.

CAPCOM Roger, we copy.

SPACECRAFT And Houston, CDR. The - I stopped in the middle of the cabin atmosphere management procedure because of the IMU align. I'm on page 5-10. I've set the C&W limits right up there at the top and I'm getting ready to do the 14 points (garble) - 14.7 cabin (garble) stuff.

CAPCOM Roger, we copy, Richard. And CRT 2 is yours.

SPACECRAFT Roger.

STS-8 AIR/GROUND TRANSCRIPT t41j 242:15:49 8/30/83 PAGE 2

CAPCOM Challenger, Houston. We're about 45 seconds to Hawaii LOS and we should be picking up TDRS.

SPACECRAFT Okay, see you there.

CAPCOM Challenger, Houston with you through TDRS, how copy?

CAPCOM Challenger, Houston with you through TDRS, how copy?

CAPCOM Challenger, Houston with you through TDRS, how copy?

SPACECRAFT Roger, Houston. Read you loud and clear, how me?

CAPCOM We've got you loud and clear, Dan.

SPACECRAFT Okay, we heard you the first 2 times you called and answered but apparently you weren't hearing us.

CAPCOM That's affirm. We didn't have any response from you.

SPACECRAFT Okay, we do have a question for you Fish. You've gotten a few fingerprints and bumped our heads on the windows and got some greasy kid stuff smudges on them and we're wondering did you remind us what the approved cleaning method for the interior windows is.

CAPCOM Standby, Dan.

SPACECRAFT Okay.

CAPCOM Challenger, Houston. Dan, you can go ahead and use alcohol wipes to clean them off.

SPACECRAFT Okay, fine.

CAPCOM Challenger, Houston, I have a couple of questions for Dan.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t42j 242:16:10 8/30/83 PAGE 1

CAPCOM Challenger, Houston. I have a couple of questions for Dan.

CAPCOM Challenger, Houston. A couple of questions for Dan.

CAPCOM Challenger, Houston. I have a couple of questions for the PLT.

SPACECRAFT Houston, CDR.

CAPCOM This is Houston. Go ahead, Richard.

SPACECRAFT Roger, Fish. I was off the headset for a minute and Dan said you were calling and was kind of staticky, and I was just wondering if we could help you.

CAPCOM Roger. I've got a couple of questions for Dan dealing with incubator status and heat pipe, and before I talk to him, maybe you can tell us if the weather we uplinked got onboard.

SPACECRAFT Yes. The weather message did get onboard. I have not looked at it yet, but Dale said it looked good.

CAPCOM Okay.

SPACECRAFT And when Dan is able to get on here in a second, I'll get him here.

SPACECRAFT Okay, Fish. I'm here. Go ahead.

CAPCOM Roger, Dan. I wonder if you could give us a little

SPACECRAFT Go ahead Fish.

CAPCOM Roger, Dan. I wonder if you could give us a little incubator status on, tell us how things went and where you are in it.

SPACECRAFT Okay. I (garble). Okay, I initiated all the samples starting at 7:27. I was a little bit late on that. I guess we were doing some other things. I took the first sample at 7 plus 32.

SPACECRAFT Houston, Challenger. Do you copy?

CAPCOM Negative, Dan. I lost you after 7 plus 32.

CAPCOM Challenger, Houston. It appears they've lost our uplink temporarily. We'll give you a call in a few minutes when we've got it back.

STS-8 AIR/GROUND TRANSCRIPT t42j 242:16:10 8/30/83 PAGE 2

CAPCOM Challenger, Houston, back with you through TDRS.
How do you copy?

SPACECRAFT Roger, Houston. Reading you loud and clear. How
me?

CAPCOM Got you loud and clear, Richard. If we could have
Dan just pick up, he'd given us 7 plus 32 on incubator activation
times, if we could have him pick from there.

SPACECRAFT Okay, I'm back again, and, no what I did, I
activated at starting at 7 plus 27 with the first sample in there
and went through and did all 4, and then turned around and got
back and fixed the first sample at 7 plus 32, and then I have my
timer set, or my tone set to alert me at 10:00 o'clock to do the
second sample.

CAPCOM Roger, Dan. We copy. Also, could you comment on
the status of the heat pipe? How is seems to have survived
launch.

SPACECRAFT It survived fine. All the tape is on and it's
looking good. I didn't get a chance to see it, but at one time
when we came up and the sunrise hit it, and Dale had commented
that the bottom tape had turned brown. Like I said, I didn't get
up and get a chance to see it, but other than that, generally,
everytime I've looked at it, all the tapes have been black.

CAPCOM Roger, Dan. That's good news. And for the CDR,
I've got a couple of quick questions.

SPACECRAFT Houston, CDR. Go ahead.

CAPCOM Roger, Richard. On the last COAS that - -

END OF TAPE

CAPCOM Roger, Dan. That's good news, and for the CDR, I've got a couple of quick questions.

SPACECRAFT Houston, CDR. Go ahead.

CAPCOM Roger, Richard. On the last COAS that you were doing, could you tell us a little bit about what DAP's you were in, and maybe give us a short summary of the activities you went through.

CAPCOM Okay. We were in AlB5 per the orbit OPS checklist and I tried, well, let's see, first we got the IMU alignment, and that was done, and then Dan and I identified the STAR and it was a good ways away from the center of the COAS, like 4 deg maybe, almost. But, it was positively identified, and I was in the A-DAP and I tried in vernier jets. I never tried the big jets because I didn't want spend that gas. But I tried it both in pulse mode and even in discrete rate. I had intended to do it all in pulse and the number of jet firings and the rates that were generated were just so slow that I felt like I was unnecessarily spending the gas. I never went to the B-DAP because it had even lower rates, as I recall.

CAPCOM Okay, roger. We copy that, Richard, and one final question for you, if you have had a chance to get to that headset malfunction procedure that we sent up to you, we would like to know the results.

SPACECRAFT Okay. No I have not, I have the equipment out and I, we haven't troubleshot it, but we will do it this evening before we go to bed and be able to report to you. I've been, ever since I got back on hardline comm since it's been working so well, I've stayed there, but I certainly am going to try troubleshot it because I'd like to be on (garble) starting tomorrow morning.

CAPCOM Roger. We copy. Just to let you know that that malfunction, that troubleshooting procedure is something you can do at your option though.

SPACECRAFT Roger. I understand, and Houston, CDR. At Guy's request, I'm about to do the flash evap deactivation for CFES per this que card and Guy needs to talk to you about the CFES, I think.

SPACECRAFT Yeah Fish, we finished up sample 2 and everything worked out well, and we got the tray back in the SSN, and we closed down the unit for this evening, and we won't be back in operation again tonight.

CAPCOM Roger, Guy. That's good news.

STS-8 AIR/GROUND TRANSCRIPT t43j 242:16:19 8/30/83 PAGE 2

CAPCOM Challenger, Houston. I have a CFES question for Guy.

SPACECRAFT Roger. Go ahead, Fish.

CAPCOM Roger, Guy, at the bottom of your Flight Supplement on page 3-2 in the que cards, on the CFES que cards, there are two times for sample 2 activation. Could you give them to us, please?

SPACECRAFT Yeah. Hold on just a moment. What do you want again, Fish?

CAPCOM Roger, Guy, we understood in the turn on and the turn off times for sample 2.

SPACECRAFT I started sample 2 at 6 hr and 58 min, and ended sample 2 at 9 hr and 43 min.

CAPCOM Roger, Guy, and also the original time you began running the CFES.

SPACECRAFT Rog. I started - - hold on just a moment. Okay, we started at 1 hr and 30 min. Right on time.

CAPCOM Right

SPACECRAFT Negative, sorry, sorry, (garble). Three hours and a minute, Fish. Sorry.

CAPCOM Roger. We copy, 3 hr, 1 min for your CFES initiation.

SPACECRAFT That's affirmative.

CAPCOM Okay, Guy. Thank you.

SPACECRAFT Houston, Challenger.

CAPCOM Houston. Go ahead, Dan.

SPACECRAFT Yeah, Fish, I got a question for you now on the incubator. Would they prefer, since I got the initial activation initiation of those four samples started a little late, would they like me to slide each individual one an equal amount so I get the same delta time on them all?

END OF TAPE

CAPCOM Standby, Dan.

CAPCOM Challenger, Houston. Dan, folks down here feel like you can leave them as they are. You don't need to slide them.

SPACECRAFT Okay. I'm getting ready to do number 2 then.

CAPCOM Roger.

SPACECRAFT Houston, CDR.

CAPCOM This is Houston. Go ahead, Richard.

SPACECRAFT Roger. A question on the manual cabin atmosphere procedure, the 14.7 cabin reg inlet number 2 valve is open. That's where I am in the procedure on 5-10, and a PP02 is coming up, but oh, so slowly. I'm assuming if we get to go to bed time, we'll just go ahead and reclose that valve and stay in that configuration for the evening. Is that correct, rather than take the chance of getting an alarm.

CAPCOM Roger, Richard. That's affirm.

SPACECRAFT Okay. Well, I'll leave it in this configuration until our last pass of the evening and if it hasn't tripped the limit, we'll just reclose it.

CAPCOM Roger.

SPACECRAFT And Fish, I just put the fixative in sample 2 and it looked like quite a bit of it just oozed right back out through the septum there.

CAPCOM Roger, Dan. We copy that. Standby. Challenger, Houston. Dan, best suggestion we can make for you is to go ahead and clean up the stuff that oozed out of the septum there, and we will assume that enough fixative got in to do the job, so you should go ahead and press.

SPACECRAFT Roger. I figured that's what you would say. I already did that. There's not a heck of a lot you can do, so I cleaned it up and I'm going to close it up now.

CAPCOM Roger. We copy, Dan.

CAPCOM And Challenger, Houston, just a note for you folks. Your state vector is onboard and it's good for the next PLS on REV 17 and your TIG will be 1 plus 00 plus 53.

CAPCOM Challenger, Houston.

SPACECRAFT Yes sir. Go ahead.

CAPCOM Right, Richard. Did you copy the state vector information I just sent up?

SPACECRAFT Yeah, I understand it's onboard and good for overnight. I just happened to be in a position where I did four things and only two hands, and I couldn't get to the -- to acknowledge. Sorry.

CAPCOM Roger, and you copied the TIG time then of 1:00:53?

SPACECRAFT No, I did not copy that, so you must have cut out. Say again.

CAPCOM Roger. TIG will be 1 plus 00 plus 53.

SPACECRAFT Okay. Standby.

CAPCOM Challenger, Houston. We are 10 sec LOS. See you at Indian Ocean at 10 plus 17.

SPACECRAFT Roger, Houston. Thank you.

CAPCOM Challenger, Houston with you through Indian Ocean for 4 min.

SPACECRAFT Roger, Houston. Read you loud and clear.

CAPCOM We've got you loud and clear.

CAPCOM Challenger, Houston. We're 50 sec LOS. Next AOS will be at Guam, 10 plus 41.

SPACECRAFT Roger, Houston. Read you loud and clear.

PAO Mission Control, Houston. Loss of signal through Indian Ocean Station. Final pass of the evening over that station. Guam in 18 min at 10:41 elapsed time, and this likely will be the final contact between Mission Control and the crew of Challenger before the crew goes into

END OF TAPE

PAO Mission Control, Houston. Loss of signal through Indian Ocean station. Final pass of the evening over that station. Guam in 18 min at 10:41 elapsed time, and this likely will be the final contact between Mission Control and the crew of Challenger before the crew goes into their sleep period, some 8 hr scheduled for sleep. Challenger now at the outset of orbit number 8, returning in 17 min at Guam. Mission Control, Houston, 10 hr, 24 min.

PAO This is Mission Control, Houston. 50 sec away from reacquisition at Guam Island tracking station. We have Guam data now.

CAPCOM Challenger, Houston with you through Guam for 5 min.

SPACECRAFT Roger, Houston. Read you loud and clear.

SPACECRAFT Yeah, Fish, if you don't have anything for us, we are reading you loud and clear. The good doctor has a few words to pass.

CAPCOM Roger, Dan. We're looking forward to hearing from him.

SPACECRAFT He'll be with you in just a second.

CAPCOM And Dan, we're wondering if the doctor was in.

SPACECRAFT He's been in all day. I tell you, he's been working harder than anybody, Bill.

CAPCOM TV. It looked like he was working pretty hard on the

SPACECRAFT We had to drag him kicking and screaming up to the flight deck to talk to you, and now it's dark out, so we're going to have to hold him up here until it comes daylight so you can see something.

CAPCOM Okay, and just to let you know, we are going to have a 30 sec keyhole here and if you lose me for a little bit, we'll be back for another 3-1/2 min.

SPACECRAFT Okay.

SPACECRAFT (Garble), Fish.

CAPCOM Right. But, beware of the keyhole.

SPACECRAFT Okay. Today we started out with the launch and entry. ERG's were routine on 2 subjects. We have done ERG's and I apologize that I don't have the exact time, but we've done the ERG's, 2 each at approximately the end of the first pass. We did another at 03:00. We did another at 08:24. Did another one at 08:41 start, 08:50 end. We've gotten an evoke potential. We have heights. We've had continuous monitoring on EOG blood pressure and EKG on one subject. Physicals on everyone and threshold audiometry. With any luck, we'll get a couple of others. We've also had complete urine sampling. And there have been a lot of odds and ends.

CAPCOM Roger, Bill. Sounds like you're gaining a tremendous amount of information and gathering all kinds of data. It really sounds like things are going well, and hope everything continues going that smoothly for you.

SPACECRAFT Things are going very well, and the most important part, really, is being here and not just the data we're getting.

CAPCOM Roger that, Bill.

CAPCOM And Challenger, Houston. Just like to know if you folks have done the LiOH changeout.

SPACECRAFT Not yet, Houston. We're going to save that to just before bedtime.

CAPCOM Challenger, Houston. We are 45 sec LOS. Dan, I copied your last transmission on the LiOH cartridge, and just a reminder for you to keep an eye on the cabin REG's, and for Richard, every one of your COAS alignments has been within acceptable ranges. Just wanted to let you know that. But we're going LOS

END OF TAPE

CAPCOM Challenger, Houston. We are 45 sec LOS. Dan, I copied your last transmission on the LiOH cartridge, and just a reminder for you to keep an eye on the cabin REG's, and for Richard, everyone of your COAS alignments has been in acceptable ranges. Just wanted you to know that. We're going LOS and see you at - -

SPACECRAFT Well, Fish, that makes me feel better and I'll have some (garble).

CAPCOM Okay, Richard. If there's nothing else, you guys have a good night's sleep, and we'll see you tomorrow.

SPACECRAFT Roger, Fish. I didn't realize that this is our very last pass. We found that the alpha wall unit was bad, over.

CAPCOM Roger. We copy, the alpha wall unit was bad.

SPACECRAFT That's correct. That was a good troubleshooting procedure.

CAPCOM Okay, Rich, we will have Santiago if you need to talk to us, but unless we have something, we don't plan to call you back.

SPACECRAFT Okay. I'll tell you what, why don't you give us an AOS call there, but don't plan a whole bunch of mission (garble) and we'll let you know where we are. We're going to go ahead and changeout the LiOH cartridge now. We don't mind if you call us. We're not going to be asleep.

CAPCOM Wilco, Richard.

PAO Mission Control, Houston. Loss of signal at Guam. Likely the final pass with any extensive communications for the evening. Mission Specialist 3, Dr. Bill Thornton, covered many of the measurements he had made on his fellow crewmates during the day. Audiometry, EKG, blood pressure, height, measurements, and weightlessness, and it sounded like he had a rather full day of patients. Santiago, Chile, the next station in 30 min. Also, Dick Truly discovered that the trouble with his wireless microphone had been in the wall unit, and he's changing that out. Perhaps that will correct the difficulty he has had with the wireless microphone. At 10 hr, 50 min, this is Mission Control, Houston.

CAPCOM Challenger, Houston with you through Ascension, UHF only, for 8 min.

SPACECRAFT Okay, Fish. We got you.

STS-8 AIR/GROUND TRANSCRIPT t46j 242:17:17 08/30/83 PAGE 2

CAPCOM Okay, and we've got you loud and clear. Sorry about not calling you at Santiago, but we had a little configuration problem.

SPACECRAFT Okay, I understand. And Fish, you're breaking up here a little bit too. We understood what you said, but we had to fill in the words.

CAPCOM Dale, you got a pretty bad echo. Can you speak a little slower?

SPACECRAFT Fish, I was just saying that you were breaking up badly.

CAPCOM Roger. You were too, although I heard you on that last transmission clearly. How me?

SPACECRAFT That last one from you was clear also. Okay, and Fish, Dick just passed up that we've changed out the LiOH cannister, and he just got through putting the temperature controller to full hot.

CAPCOM Roger, Dale. We copy that. And Challenger, Houston, on panel C3, we've got a switch for you - -

END OF TAPE

SPACECRAFT Okay, and Fish, Dick just passed up that we've changed out the LiOH cannister, and he just got through putting the temperature controller full hot.

CAPCOM Roger, Dale. We copy that.

CAPCOM And Challenger, Houston. On panel C3, we've got a switch for you.

SPACECRAFT Okay, Dick's right there. Go ahead.

CAPCOM Roger. We would like you to manually select lower right aft.

SPACECRAFT Okay.

SPACECRAFT Hey, Houston, we are on lower right aft, and when we got there, we got an antenna message.

CAPCOM Roger. We copy that, Richard.

CAPCOM Challenger, Houston.

SPACECRAFT Roger, Houston. Go ahead.

CAPCOM Roger, Richard. Sorry to be talking to you this late but we're having some questions about our antenna and we'd like to configure you to (garble) and coverage prior to going LOS here, and if you could perform on page 2-2 of the orbit pocket checklist under the comm lost procedure, step number 3, beginning (garble) and coverage.

SPACECRAFT Okay, you want us to do just step 3, or all the way to the bottom.

CAPCOM Just step 3, Richard.

SPACECRAFT Okay, that's in work. No problem.

CAPCOM Okay, and you guys have a good night.

SPACECRAFT Okay. I'm heading back and we'll do step 3 right now.

CAPCOM Roger.

SPACECRAFT And Houston, where do you want -- what position do you want the antenna switch on C3 left in?

CAPCOM Richard, we'd like you to go back to GPC on the antenna switch.

STS-8 AIR/GROUND TRANSCRIPT t47j GMT 242:18:06 8/30/83 PAGE 2

SPACECRAFT (Garble) want to do. Roger.

CAPCOM Challenger, Houston. We're about 30 seconds LOS. Have a good night. You've got a big day tomorrow.

SPACECRAFT Yes. See you in the morning.

SPACECRAFT I don't see how it could've been more fun than today was, but boy, I don't know what that launch looked from the ground but it was spectacular from the cockpit.

CAPCOM It caught the attention of a few folks on the ground too, Richard.

SPACECRAFT It was (garble).

PAO This is Mission Control, Houston. The handover of the flight control teams here in Mission Control is essentially complete and the offgoing Flight Director, Harold Draughon will be expected to be available for his press conference in about a half an hour in room 135 of building 2 here at the Johnson Space Center. Crew is in their scheduled sleep period, but they were quite active until recently, or at least through our last communication. There was some troubleshooting of a communications problem. Unsure at this time as to what the nature of that is, whether it's a configuration of antennas or some difficulty in relaying a signal through the TDRS to the spacecraft. Challenger's on orbit number 9, and the crew is expected to be getting to sleep fairly soon. They have - - the next big activity of the mission will be the deployment of the INSAT satellite, and that's only about 13 hr away. That will be at approximately 1 day, 1 hour, 17 minutes, and 2 seconds Mission Elapsed Time, predicted to be 2 sec off of the published crew activity plan time. Spacecraft is in a 161 by 160 nautical mile orbit, taking an hour and a half to circle the earth. Had a fairly busy day today, and they have completed the electrophoresis samples number 1 and 2. Some problems in positioning the camera used for the Tail Glow experiment, but all in all, everything has gone very well today. No major problems in work and very few really even of the minor nature. We're at 12 hr and 2 min Mission Elapsed Time. This is Mission Control, Houston.

CAPCOM Challenger, Houston.

CAPCOM Challenger, Houston. No reply required. We're going to switch NSP's.

END OF TAPE

CAPCOM Challenger, Houston. No reply required. We're going to switch NSP's. Troubleshooting a comm problem.

PAO Mission Control, Houston. 12 hr, 25 min Mission Elapsed Time. During that last pass over the Guam station, the CAPCOM Brian O'Connor notified the crew that the ground was commanding a change in the communication system switching the network signal processors, and that is part of the troubleshooting activity going on relative to the communication system, and it required no action on the part of the crew.

Testing, 1, 2, 3, 4, 5. Testing, playback 4, 1, 2, 3, 4, 5. Playback 4. Testing Playback 4.

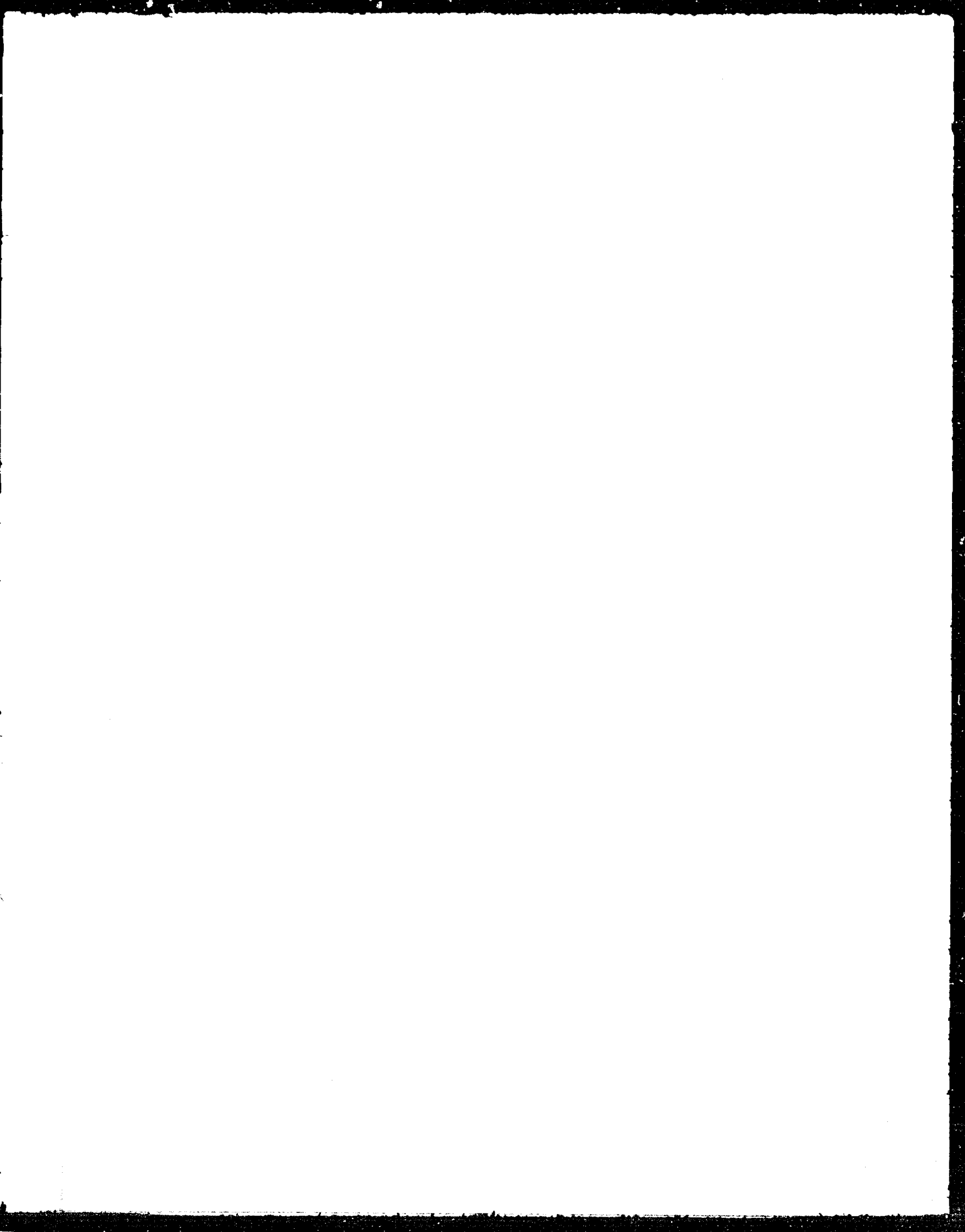
PAO This is Mission Control, Houston. Things are very quiet here in Mission Control at the present time. Crew is in their scheduled sleep period, and have about 4-1/2 hr remaining before they are due to get up and begin the activities before the deployment of the Indian National Satellite. That deployment will occur at about 1 day, 1 hr, 17 min into the flight. Spacecraft is on the last remaining segment of orbit number 10, about to cross up over the mid section of South America. Very little going on. All systems onboard the spacecraft appear to be in good shape at the present time. There have been no error messages on the fault chart for quite some time, and the flight controllers here in Mission Control simply preparing the teleprinter messages which will be sent up in a couple of hr to the crew so they will be ready for them to read at the start of their day. At 14 hr, 33 min - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t49j 242:21:05 8/30/83 PAGE 1

PAO ...Very little going on. All systems onboard the spacecraft appear to be in good shape at the present time. There have been no error messages on the fault chart for quite some time. And the flight controllers here in Mission Control simply preparing the teleprinter messages which will be sent up in a couple of hours to the crew so that they will be ready for them to read at the start of their day. At 14 hours, 33 minutes into the flight of STS-8 this is Mission Control, Houston.

END OF TAPE



PAO Mission Control Houston at 15 hours 37 minutes mission elapsed time. Flight of Shuttle flight number 8. Challenger is currently out over the south Pacific, crew is still in their scheduled sleep period and things are relatively quiet here in Mission Control. Principle activity has been to prepare the teleprinter messages to uplink to the crew so they will have them for their review early in the morning describing any changes to the preflight published timeline. Crew faces a fairly busy day when they get up in about 3 1/2 hours. After allowing them some time to prepare and consume their breakfast, they will be getting ready - first order of business to deploy the Indian national satellite. That is a communications and weather satellite for the government of India. With the Insat 1B and it will be placed in geosynchronous orbit about 22,500 miles above the Indian continent. That activity begins right about 24 hours into the mission. That's approximately 8 hours or so from this time. That will begin with the check out of the Orbiter, all systems onboard the Orbiter that support the deployment of that satellite, and then about 15 minutes later they will check the payload assist module and the Insat satellite. At about 30 minutes after that, or about 1 day 47 mins into the flight, the pilot and commander Richard Truly will begin maneuvering the spacecraft to it's deploy attitude at which the satellite will be pointed in the right direction for its ejection from the cargo bay. This particular satellite is spin stabilized, well, most of those are. It is very important that we do get those out, for a correction on that the times we have flown in the past have been spin stabilized. This satellite is a three-axis stabilized satellite. It is still, of course, very important the direction in which you point that so that it is oriented properly for the firing of that payload assist module the solid rocket motor. The time of launch has been related to the time at which we deploy that satellite. It will go out of the payload bay so that at the proper time, is over the Indian continent at the equator, and so that it is oriented to have its guidance system lock in on both the Sun and the Earth to properly orient itself. Crew also, when their day begins, will at some point during the day activate the get-a-way special canisters number 346, 348, and 475. The 346 canister is an investigation into how cosmic rays in space will strike and interfere with computer circuits on the Shuttle. These cosmic rays can impact the delicate electronic circuits and cause memory loss in some circuits. Experiment get-a-way special number 348 is a study of the erosion effects of atomic oxygen on carbon and osmium samples. And experiment number 475 is a repeat of the artificial snow experiment which was initially flown on Shuttle flight 6 by the Asahi Shimbun which is the large Japanese newspaper in Tokyo. They have made some modifications to their experiment which did not work on STS-6 and hope to create snow in space and observe how the crystals form in a weightless environment. Additional samples on the continuous flow electrophoresis system will be run. Those will be four sets of samples that are scheduled to be run tomorrow. And, that will

STS-8 AIR/GROUND TRANSCRIPT t50j 242:21:42 8/30/83 PAGE 2

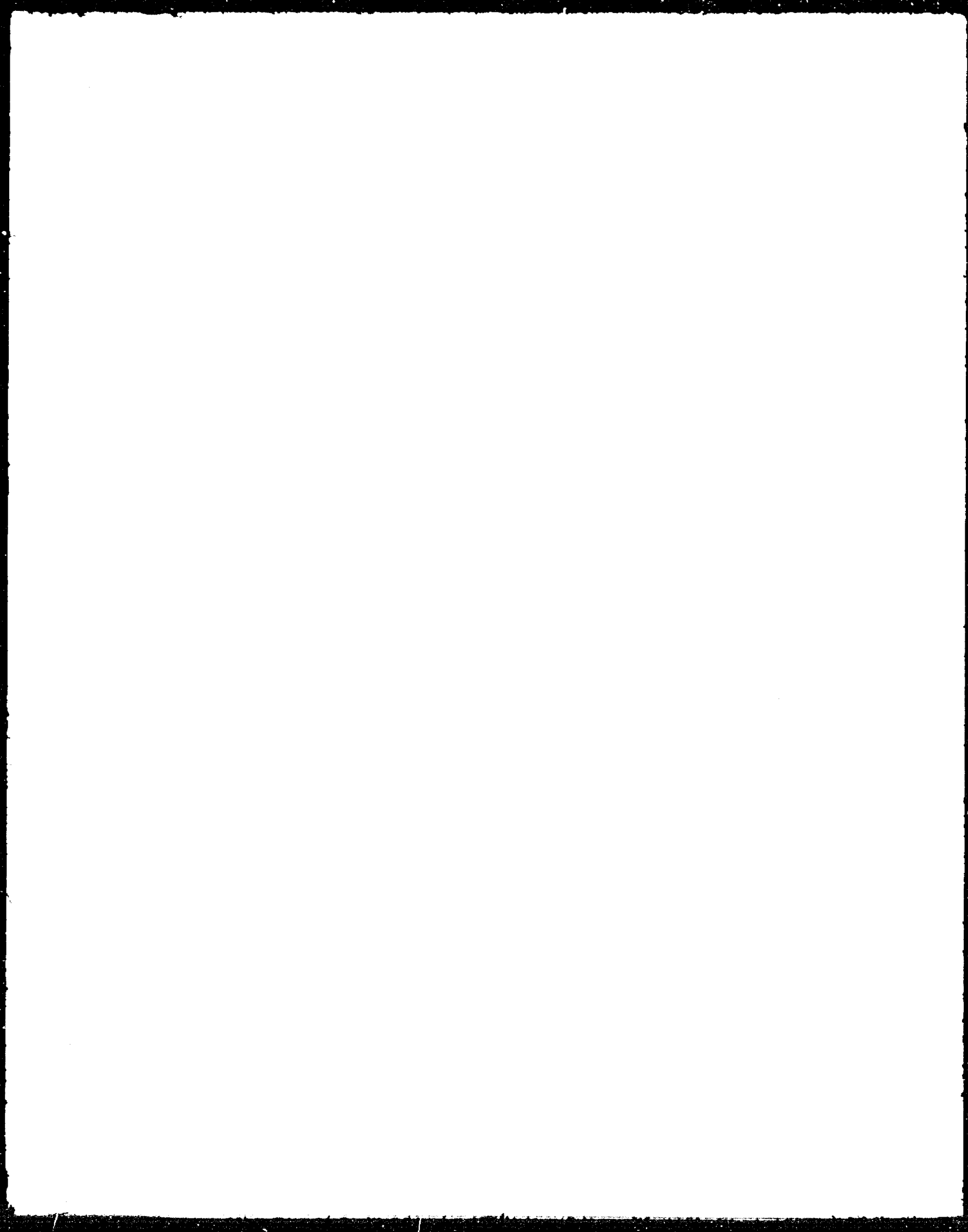
represent the major portion of activity for that experiment. Flight controllers here in Mission Control have been, and are currently reviewing some of the television that came down from the spacecraft today. They saw a replay of the launch a little bit ago and are now reviewing the television from the Orbiter mid-deck crew activities during the day. We are considering canceling the change-of-shift press conference for the off-going overnight planning team of flight controllers here in Mission Control. Really, no significant activities tonight. Spacecraft systems have been operating quite well. The crew appears to be asleep and everything is going quite smoothly at the present time. So when this team gets off the shift would have normally had 10:00 p.m. central daylight time press conference. We are planning on canceling that unless - -

END OF TAPE

PAO Spacecraft systems have been operating quite well, the crew appears to be asleep and everything is going quite smoothly at the present time. So when this team gets off shift, would have normally had 10:00 p.m. central daylight time press conference, we are planning on cancelling that unless other conditions should cause us to bring that back if there should be any major problem, we would bring that back. We will make a further announcement later on this evening as to whether we will hold that press conference. At 15 hours 43 minutes mission elapsed time, this is Mission Control Houston.

PAO Mission Control Houston, at 17 hours 35 minutes mission elapsed time. Mission Control is acquiring spacecraft data through the tracking data relay satellite. And there was an indication recently that not too long ago one of the crewmembers turned on one of the CRT's, that is one of the three television screen displays, in the cockpit and that we don't have an indication of what the reason for that was at the present time. About an hour and 45 minutes ago, there was a fault message which simply says antenna. The communications officers are looking at why that message might have been generated, it's similar to 3 earlier messages that we got from the spacecraft data system earlier in the evening relating to the communication system problem. The problem that the ground controllers have been looking at seems to be one of low strength of signal or no signal coming into the antennas that are suppose to be receiving data through the tracking data relay satellite. They believe that that involves a small electronics piece that decides which antenna is the appropriate one on the Orbiter to be selected to receive the best signal from the satellite, at least in one of the redundant systems, one that had been being used, and they are continuing to think on that one and determine if that is indeed the probably cause of those antenna messages getting on the fault summary chart. Everything else appears to be going well onboard the spacecraft. Still in an approximately 160 nautical mile circular orbit. Challenger is on the last portion of orbit number 12 out over the Pacific Ocean, just to the west of South America and we'll be starting orbit number 13 in about 10 minutes or so. Teleprinter messages have been prepared to be uplinked to the crew and those will be going up shortly, describing any changes in their flight activity plan for tomorrow. They have about an hour and 20 minutes remaining in their scheduled sleep period and after they get up and have breakfast, they will begin making preparations for the deployment of the Indian National Satellite. And that will come at about 1 day 1 hour and 17 minutes, mission elapsed time, or about 8 hours from now, a little bit less. At 17 hours 38 minutes mission elapsed time, this is Mission Control Houston.

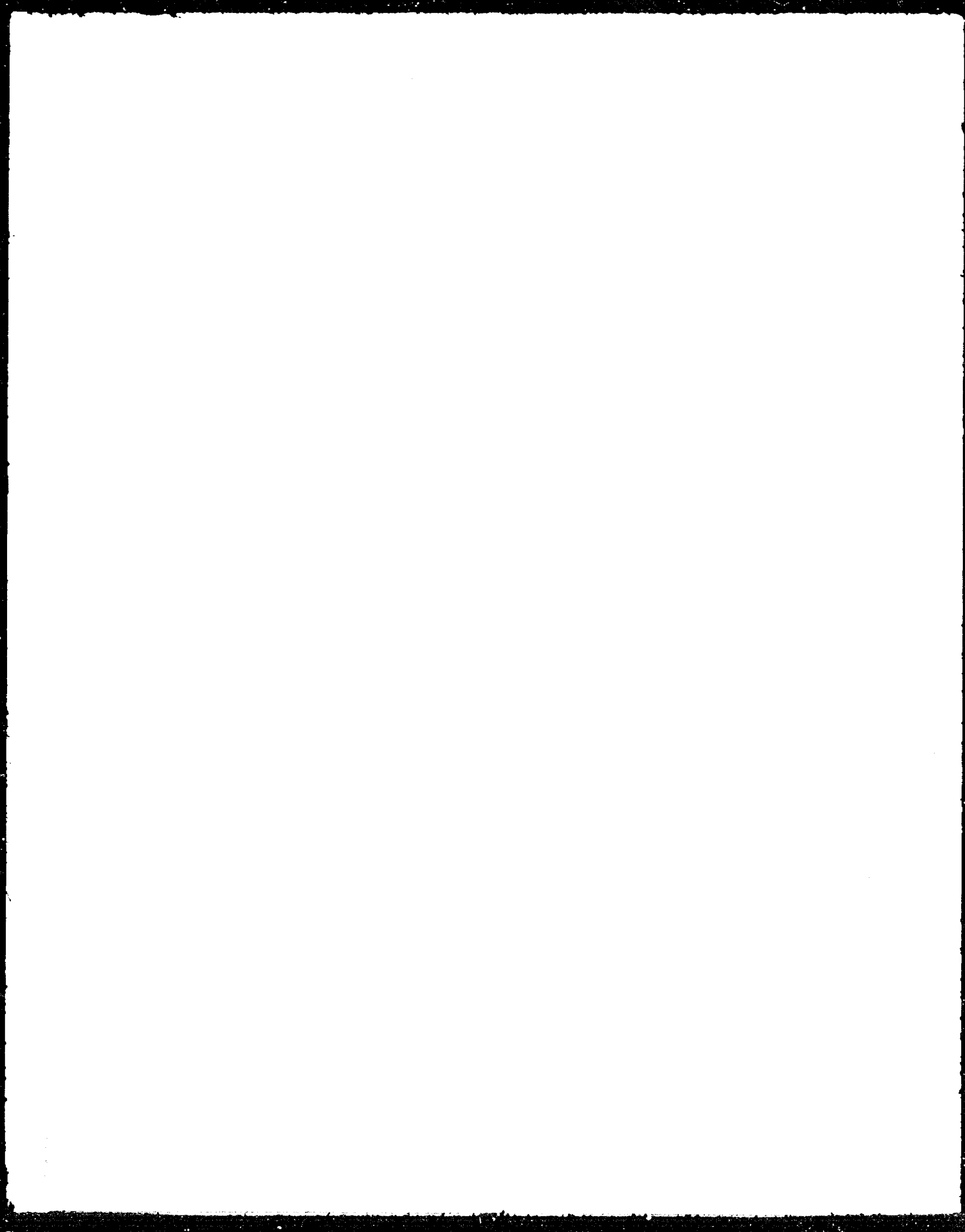
END OF TAPE



PAO This is Mission Control, 18 minutes into the flight of STS-8. Challenger on orbit 13, has just passed into the range of the Dakar tracking station. The spacecraft has been within the view of the tracking data relay satellite and we've had a constant stream of data from the vehicle since it got within range of that satellite, its acquisition of signal as it comes around from the western pacific region, it picks up about 170 degrees west longitude. Data down from the spacecraft, looks good, we see no new additional fault messages other than that one at about 2 or so hours ago, 2 or more hours ago on the antenna which is again part of communications system anomaly that flight controllers here have been looking at all evening. Again, that doesn't appear to be anything serious but periodically get some indication that it looks like a piece of electronics gear that selects which of the antennas onboard is the best one to receive signal. It does not always properly select the right one. It will then give us a fault message from time to time. The spacecraft in a approximately 160, 161 by 159 nautical mile orbit. The crew has about an hour left in their scheduled sleep period and we're about an hour away from the beginning of hand-over to the next flight control team. That will be the orbit one team with flight director, Randy Stone. They will be working on the deployment of the Indian National Satellite. That deployment to take place in about 7 hours. At 18 hours, 3 minutes mission elapsed time, this is Mission Control, Houston.

PAO This is Mission Control, once again we wanted to indicate our intention to cancel the previously scheduled 10:00 p.m. change-of-shift briefing with off-going flight director, Jay Greene. The minimal activities here in mission control this evening on the planning team, we feel bear no cause to have a press conference this evening, however, should any events develop that need attention we would always reserve the right to reinstitute that but at the present time, things are very quiet and we do intend to cancel that 10:00 p.m. change-of-shift press conference. There will be further word on that a little later this evening. This is Mission Control.

END OF TAPE



("Wake up" Music)

CAPCOM Good morning, Challenger.

SPACECRAFT Good morning, how do you read?

CAPCOM Got you loud and clear, how about me?

SPACECRAFT Roger, loud and clear. That's the spirit.

CAPCOM Roger that and we've got you TDRS right now, we're standing by for about 45 minutes.

SPACECRAFT Okeidoke, we'll roust everybody up and we're beginning to move.

CAPCOM Okay.

PAO Mission Control. That was the Georgia Tech Fight Song for the alma mader Commander, Richard Truly. The crew is up and beginning to stir around on the spacecraft, Truly reports. Just got communication through the western edge of the range of the tracking data relay satellite. Data is good and they're getting high data rate on S-band. They are very pleased with that, the Comm people are. It's 19 hours and 2 minutes into the 8th flight of the Space Shuttle. This is Mission Control.

SPACECRAFT Houston, CDR.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT Roger, Bryan. I've taken a very quick onceover look at the morning mail in the teleprinter and I just glanced at it, haven't reveiwed it really and I'm going to put it aside and the guys, we're beginning to clean up and shave and so forth. So I think I'll put off a few minutes really going through it in detail. If there is anything that you need to get to me early this morning. Now would be a good chance, otherwise we're just going to go ahead about our business here and then organize the teleprinter message a little bit later.

CAPCOM Roger, we don't have anything immediate for you, Richard, we do have a comment about 2 of the messages. Messages 4 and 5 do not apply to today, they apply to flight day 5 but we wanted to get them up to you early to let you take a look at them.

SPACECRAFT The startracker stuff, roger, I understand.

CAPCOM That's affirm.

STS-8 AIR/GROUND TRANSCRIPT t53j 243:01:24 8/31/83 PAGE 2

SPACECRAFT And incidentally, I'm communicating with you listening over the speaker and using the wireless as a walkie talkie, TK's idea, and it seems to be working real well.

CAPCOM Well, that's great.

END OF TAPE

PAO Mission Control Houston, the crew of the Challenger is up and reviewing their teleprinter messages this morning. The handover now preceding between the planning team, Flight Director Jay Greene and the orbit 1 team of Randy Stone. And we will be starting the day's activities here shortly. Moving into the scheduled deployment of the Indian National Satellite at about 1 day 1 hour and 17 minutes into the flight. That will be occurring in about five hours or so. Everything looks very clean onboard the Challenger, the flight controllers here in Mission Control who are participating in the handover reporting to the oncoming shifts that in most cases there are very few things that require any attention as they begin their new shift here. Just a reminder that we have cancelled the previously scheduled 10:00 p.m. central daylight time change of shift press conference that would have been with the off going flight director Jay Greene, we will not hold that unless between now and then some great circumstance should change our minds but we certainly attend to cancel that briefing and as everything appears to be going smoothly at the present time we don't anticipate rescheduling that. At 19 hours and 30 minutes into the flight of STS-8, this is Mission Control.

CAPCOM Challenger, Houston we're going off TDRS in about a minute, pick you up in 5 minutes at IOS.

SPACECRAFT Roger, Houston, see you there.

CAPCOM Challenger, Houston, with you through IOS for about 8 minutes and orbit 1 team is on, wishes you a good day.

SPACECRAFT Well good morning, Houston, and we're looking forward to a good day and we're doing our presleep activities and getting squared away around here.

CAPCOM Okay, well when you have some time out from your presleep activities, we've got a few notes for you, nothing in a real hurry so let us know when you want to talk about them.

SPACECRAFT Okay, it'll probably be a few minutes, we'll give you a call.

CAPCOM Okay, talk to you then.

PAO This is Shuttle Mission Control, at 19 hours 58 minutes mission elapsed time. That communication occurred through Indian Ocean station between Challenger commander Dan Brandenstein and the capsule communicator Jeff Hoffman. The vehicle's on orbit 14 and the crew's reported its postsleep activity in progress. The time bracketed for this activity and the summary timelines is notably longer than that reflected in the past missions since that time that activity now encompasses such items as meal preparation which were previously shredded out

STS-8 AIR/GROUND TRANSCRIPT t54j 243:01:55 8/31/83 PAGE 2

from postsleep activity but now that term embraces a variety of activities formally listed separately. The orbit 1 team under flight director Randy Stone has assumed control of the mission here in Mission Control Center. The debriefing has been completed and was notably free of subjects and the handover was a present experience of not having too many to work as these two teams exchange console positions. Mission elapsed time, 19 hours 59 minutes, this is Mission Control Houston.

END OF TAPE

CAPCOM Challenger, Houston, 30 seconds LOS, talk to you through Yarragadee at 20 + 12.

SPACECRAFT Roger, Houston, read you loud and clear.

CAPCOM Challenger, Houston, with you through Yarragadee for 8 minutes. Also loud and clear. Okay.

SPACECRAFT Houston, CDR, waiting to copy.

CAPCOM Okay. I've got a bunch of (garble) stuff for you first, and to start out with Dick, we'd like a water supply dump at MET 21 hours, and we'd like for you to dump tank bravo to 0 % which should take approximately 1 hour.

SPACECRAFT Roger understand, supply water dump at 21 hours, dump tank bravo to 0%, it'll take an hour.

CAPCOM That's correct, we'd like you to reconfigure the cryo for set 1 and 2 operations, and that'll be over on panel R1. The O2 and H2 cyro heaters for tank 3, alpha and bravo 4 of them to off.

SPACECRAFT Okay, got them.

CAPCOM We don't need any cabin atmosphere management this morning and down on panel MO10W we'd like you to verify 214.7 cabin reg inlet valves closed. That's two valves closed.

SPACECRAFT Okay, I'm sure they are, but Guy's going to double check right now.

CAPCOM Okay and we're going to want to top off the supply water tanks, Charlie and delta, and that'll be panel R12, the supply water tanks bravo inlet valve closed. Dick, did you copy the last on the supply tanks C and D?

SPACECRAFT No we didn't.

CAPCOM Okay, Dan, we'd like for you to top off supply water tanks Charlie and delta, on panel R12, supply water tank bravo inlet valve to close and the MOCR will call you when to reopen the valve when the tanks C & D quantity gets up to about 95%. We estimate that'll be about 6 hours.

SPACECRAFT Okay we'll go get that.

CAPCOM Okay and finally, at 21 hours, you've got CFES (garble) 3, excuse me, that's on the incubator, to (garble) to sample 3 and since you had some minor seepage from the membrane on sample 2 when the suringe was injected, payloads would

STS-8 AIR/GROUND TRANSCRIPT t55j GMT 243:02:32 8/31/83 PAGE 2

recommend that you inject sample 3 at a slightly slower injection rate to prevent a possible recurrence of that.

SPACECRAFT Jeff, do we need the CFES memory in order to do that?

CAPCOM Stand by a minute.

SPACECRAFT Hey Guy, excuse me, Jeff, on that, you just stated you did mean CFES and not incubator, right?

CAPCOM Negative, it's the incubator. We're talking about the incubator.

SPACECRAFT I thought it maybe sounded like, but thought you said CFES, so we just wanted to double check. Okay I'll try doing it slower, I even did it pretty slow last time, but we'll try even slower.

CAPCOM Okay and we'll see how it works. Challenger we're going LOS in about 30 seconds, it'll be a short one, pick you up in another minute through Orroral.

SPACECRAFT Okay Houston, we got tank bravo inlet closed.

CAPCOM Copy. Challenger, Houston with you through Orroral for 5 minutes.

SPACECRAFT Roger, Houston, and we're trying to realign attitude.

CAPCOM Copy.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t56j 243:02:54 8/31/83 PAGE 1

CAPCOM Challenger, Houston, we're LOS 30 seconds, pick you up through TDRS in about 10 minutes.

SPACECRAFT Roger, Jeff, see you there.

CAPCOM Challenger, Houston's with you through TDRS.

SPACECRAFT Roger, Houston, read you loud and clear and I just fired up the fuel cell purge heaters.

CAPCOM Okay.

SPACECRAFT Say, Houston, CDR, the IMU align's complete and I'll give you the numbers in just a minute.

CAPCOM Okay, we're ready.

SPACECRAFT Jeff are you hearing a bad squeal when I transmit?

CAPCOM Yes, we hear a pretty bad squeal, how are we coming through?

SPACECRAFT You're loud and clear, let me change the batteries on this WCCU and get back to you.

CAPCOM Okay.

PAO This is Shuttle Mission Control, at 20 hours 38 minutes mission elapsed time. We're communicating with the vehicle now through the TDRS system. Mission commander Dick Truly still experiencing some trouble with his wireless communications unit. That squealing is an indication of something problematically in his unit exclusively. There have not been any feedback problems with any of the other four crewmembers so Commander Truly is changing the batteries in his wireless comm unit in the hope of alleviating that problem. Challenger on orbit 15.

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM You sound a little bit better now, Dick.

SPACECRAFT Okay, Jeff, I've still got a squeal so I guess that wasn't it but I'm ready to read you the IMU data.

CAPCOM Okay, yes, I guess I spoke prematurely when I said you sounded better because the second time you talked the squeal was just as bad as the first time.

SPACECRAFT Okay, Houston, this is a replacement for the CDR, hopefully my comm's a little better. The IMU alignment minus Y star ID is number 20, minus Z is 51, angle error was 0 decimal

STS-6 AIR/GROUND TRANSCRIPT t56j 243:02:54 8/31/83 PAGE 2

01, delta angles 01, delta X plus decimal 07, Y is minus decimal 03, Z is minus decimal 01, for number 2 it's minus decimal 11, plus decimal 03, minus decimal 02. For number 3, plus decimal 08, minus decimal 0 niner, plus decimal 08 and the execution time was 20 hours 33 minutes and 48 seconds.

CAPCOM Okay, Dan we copy all that. INCO had a question, are there any speakers on down there, we're trying to figure out whether its a feedback coming into Dick's comm there?

SPACECRAFT (garble) the upstairs one isn't on and I'm not getting any feedback but we can go down and check.

CAPCOM Okay.

SPACECRAFT Houston, CDR, the speaker was on, it's now off, and obviously I still have the squeal.

CAPCOM I'll confirm your squeal, that's for sure. Dick the guys down here are going to think about that a little bit and see if we can come up with something for you to try.

SPACECRAFT Roger. Houston, Challenger, you still there?

CAPCOM We're with you.

SPACECRAFT Okay, while INCO's perplexing over Richard's WCCU, I'll just tell you what, with mine everytime I go down in the middeck I get a tremendous squeal into my ear and I'm still using it, it works great on the flight deck but for some reason on the middeck it's pretty much useless so I just take my headset off when I go down there but it'll give you something to think about.

CAPCOM Okay, INCO's scratching his head about that.

SPACECRAFT Okay, that's probably all that's required, I can operate just fine the way it is.

CAPCOM Okay.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t57j 243:03:22 8/31/83 PAGE 1

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM Very loud and very clear, sounds good.

SPACECRAFT Roger, the problem was is that the, you know these antennas are color coded to match these leg devices and the color code was incorrect and so I am now matched up with an antenna that seems not to squeal with this leg unit.

CAPCOM Okay, well I think you probably saved INCO a lot of trouble trying to sych that out.

SPACECRAFT Okay, to tell you the honest truth, I'm still not satisfied with it because even though I do not have the squeal, I do have in my own side tone a continual squelch that's kind of irritating so later on in the day I'm going try the - another unit if I can but right now at least it's loud and clear for you so I can operate this way just fine.

CAPCOM Okay, that sounds good.

CAPCOM Challenger, Houston, we have switched from TDRS over to Mila..

SPACECRAFT Okay, Houston, read you loud and clear through Mila.

SPACECRAFT And Houston, Challenger, I'm starting the manual fuel cell purge right now.

CAPCOM Okay, Dan.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Two things, I'm on fuel cell number 2 on the purge, the O2 flow came up as expected and the H2 flow is the one that we have that problem with so I have no visibility into that, I'm assuming that one is working alright and the other is that the PPO2 sensor just tripped as a result as our manual management procedure.

CAPCOM Okay, we saw the PP02 alarm. We think it is an instrumentation problem and right now you should ignore it.

SPACECRAFT Okay, we will.

CAPCOM Challenger, we're 30 seconds LOS pick you up at Dakar at 21:12.

SPACECRAFT Okay, we'll see you there.

CAPCOM Challenger, Houston with you through Dakar for about 7 minutes. And Dan, got a couple of questions on the PCS.

SPACECRAFT Okay, stand by a second.

SPACECRAFT Houston, Challenger, check if there's not a big crush on that PCS, Richard is trying to get his comm squared away and he would like to be up when we talk about it.

CAPCOM Sure, Dan, we can wait on that. We've got about a 7- minute pass here.

SPACECRAFT Okay, fine, he should be with us in a second.

CAPCOM We'll stand by.

SPACECRAFT Okay, I'm sure he'll give you a call as soon as he gets up if not I'll tag up before you go off.

CAPCOM Challenger, Houston, we've got 3 minutes left in the pass.

SPACECRAFT Okay, let me check on the comm situation here.

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM Read you loud and clear.

SPACECRAFT Well, I read you loud and clear for the first time in a long time also, go ahead.

CAPCOM Okay, what we would like to find out is whether anybody was doing anything to the PCS at the time of the alarm. We had been assuming that there was going to be no manual management of the PCS and therefore when we saw sensors changing around at various times, we assumed an instrumentation problem. But we would like your conformation on that.

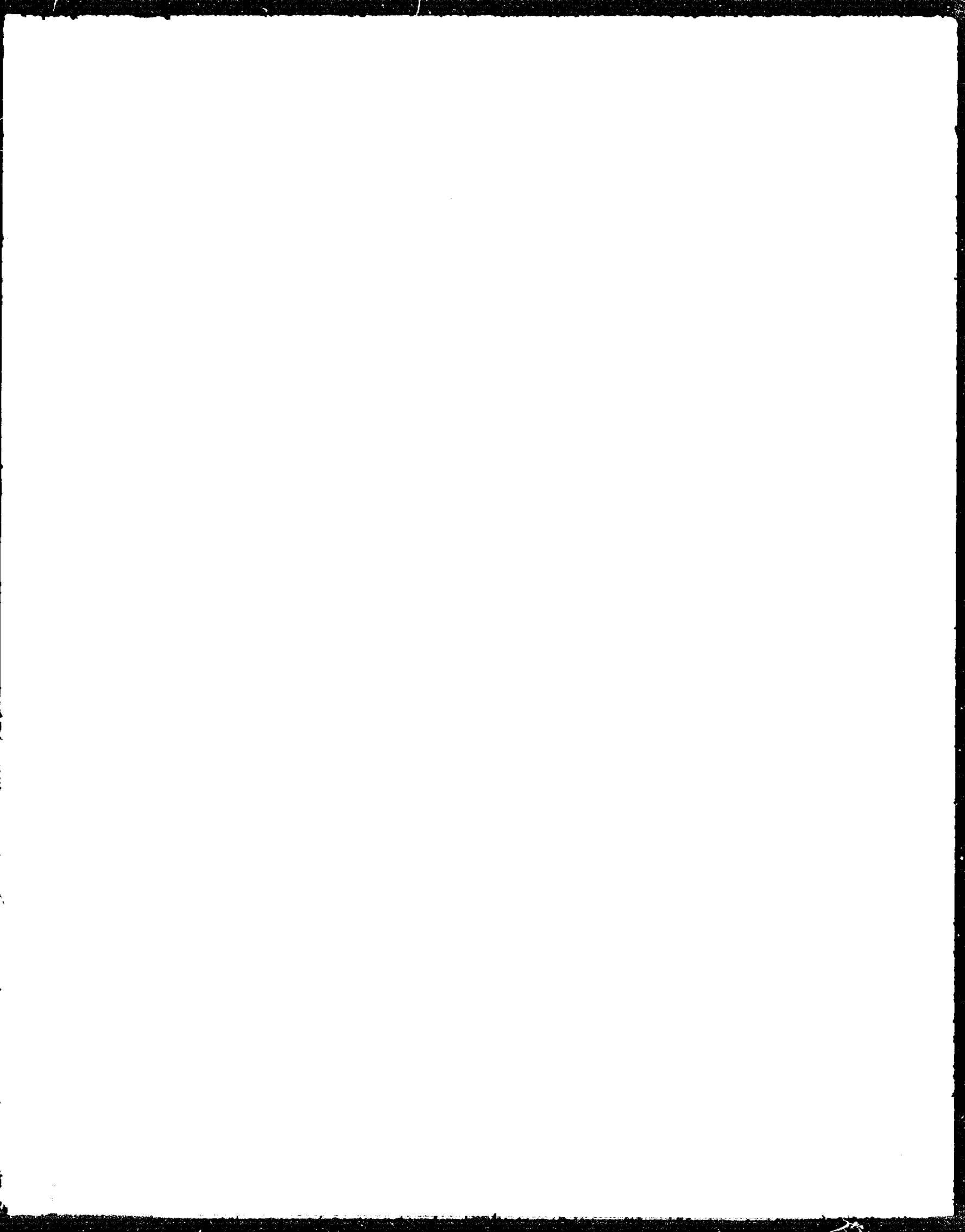
SPACECRAFT That's firm, Jeff. The only - stand by.

SPACECRAFT Roger, Jeff, negative we have not done the manual management procedure this morning because you called up and deleted it. The only thing that we have done this morning was we closed the 14.7 cabin reg inlet which apparently I should have closed presleep last night. Onboard, the indication is that the PP02 sensors alpha and charlie both agree and read about 3.2 but bravo for some reason crept up to above 3.4 so other than closing that one valve this morning, that's the only thing I've done with it.

CAPCOM Okay, we understand.

STS-8 AIR/GROUND TRANSCRIPT t57j 243:03:22 8/31/83 PAGE 3

END OF TAPE



CAPCOM Okay we understand. We're about 30 seconds LOS, we got IOS pass at 2131, you've got a TMBU onboard now for your deploy ID and the time and I've got a preliminary deploy pad which I'll read to you any time you want to get it, in the subsequent passes.

SPACECRAFT Okay we'll be ready to copy as soon as you come up again Jeff, thanks a lot.

CAPCOM Okay talk to you through IOS

PAO This is Shuttle Mission Control at 21 hours 19 minutes mission elapsed time. Activity onboard the vehicle and communications now beginning to pick up as we come out of the postsleep activity period and begin the day's events. The PCS alarm was a tone we got in the primary cooling system may have been a spurious alarm and the Flight Control Team was just checking with crew activities to see if there were any actions onboard Challenger which may have prompted that alarm. The TMBU that CAPCOM communicator Jeff Hoffman referred to is a table maintenance buffer update which is uplinked to the onboard computers to prevent alarms from being triggered by temperatures in the APU system in as much as there was earlier reported. A corc pump failure in the APU hydraulic system of that failure is going to cause temperature spikes and in as much as we're aware of the problem with that system, there's no need to have alarms constantly flag us as those temperatures fluxiate. Accordingly the temperature alarm levels will be adjusted by that table maintenance buffer update. The new pad for deploy time will be a deployment time for INSAT expected to be at 1 day 1 hour 16 minutes and 54 seconds and that pad will be uplinked to the crew during the next acquisition of signal through the Indian Ocean station in about 9 1/2 minutes from now. Primary activities for the day's event are of course the deployment of INSAT at the time I just cited to you and of course - -

SPACECRAFT we copy that and we're digging out the PAM deploy checklist right now and as soon as we get them up and settled in we'll ask you for them.

CAPCOM Okay I'll wait on you.

PAO This is Mission Control again, that air to ground exchange through the TDRS system and continuing the other major event to the day is the scheduled CFES activities where the final samples will be processed to the continuous flow electrophoresis machine. Today will represent the end of CFES activities for this mission. And the number of medical DSOs or detailed secondary objectives will be performed on the crew-members by Dr. Bill Thornton. At mission elapsed time 21 days, 21 hours, 23 minutes, this is Mission Control Houston.

STS-8 AIR/GROUND TRANSCRIPT t58j 243:03:51 8/31/83 Page 2

SPACECRAFT Houston, Challenger I think we're finally ready to copy the deploy pad, so go ahead any time.

CAPCOM Okay, you're MET is 001/01:16:54, the GMT is 243/07:48:54 and item 17 on the table is +21 023 334, deploy attitude roll 344.98, pitch 072.79, yaw 335.24, read back.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t59j 243:03:57 8/31/83 PAGE 1

SPACECRAFT Okay, 001, 01, 16, 54; 243, 07, 48, 54; 21, 023, 334; 034 niner 8, 0727 niner and 335 24.

CAPCOM Let me give you the roll attitude again. It's 344.98, repeat 344.98, rest of the readback was correct.

SPACECRAFT Roger, copy roll item 5, 344 niner 8.

CAPCOM That's correct.

SPACECRAFT Okay, and I'm assuming you don't have a, you're going to wait later to pass up the SEP pad is that correct?

CAPCOM That's affirm, yes, we'll get that to you later.

SPACECRAFT Okay, Jeff, thanks a lot. And Jeff, while I got you here, let me update INCO on the WCCU situation just so he's up to speed with us and we can work it from here.

CAPCOM Okay, we're listening.

SPACECRAFT Okay, first of all the alpha unit failed yesterday and in order to replace it, I got out one of the echo units and was attempting to use that, unbeknownce to me a configuration had been set up downstairs that also had used an echo unit and I think the interference that I've been having, the squeal, has been an improper configuration onboard due to that. I am now using the delta unit at the CDR station and it seems to be working okay and when Bill has a chance downstairs he's going to plug both of the echo units into the splitter and I think we should be back into good configuration with the exception of the failure yesterday of the alpha unit.

CAPCOM Okay, we understand what you said and we're about 20 seconds LOS. This time we really will get you at IOS at 21, 31, about 2 minutes.

SPACECRAFT Okiedoke, we'll see you there.

SPACECRAFT And Houston, the water dump for tank bravo just started.

CAPCOM Okay, Dan.

CAPCOM Challenger, Houston back with you through IOS about 9 minutes.

SPACECRAFT Roger, you are loud and clear, Houston.

CAPCOM Challenger, Houston, on the overhead panels.

SPACECRAFT Roger, go ahead.

STS-8 AIR/GROUND TRANSCRIPT t59j 243:03:57 8/31/83 PAGE 2

CAPCOM We need the RGD drivers, 8 of them ON for the primaries.

SPACECRAFT Roger, stand by.

SPACECRAFT Roger, Houston, the primary drivers are on.

CAPCOM Yes that step got burried in the interconnect step on the postsleep activity and we asked you not to do the interconnect, that's probably what happen.

SPACECRAFT Exactly what happen, you read our mind. Houston, Challenger, we're just getting ready to do the cryo O2 tank heaters sensor checks so if you see some, something going on, that's it.

CAPCOM Okay, thanks for letting us know.

SPACECRAFT And Houston, CDR, the test worked okay on the cryo - the O2 tank heater sensor test, we did get a message when I reset tank 2 and looking at the spec 68, it looked like one of the sensors just didn't reset, was a little slower to reset than the others and perhaps that explains it, but the test looks okay to us.

CAPCOM Could you verify, you said one sensor was slower to reset or it did not reset at all?

SPACECRAFT It did reset but on the CRT it was, it looked like one or two updates on the CRT before it reset. It was cryo tank two if you would like me to go through it again I will.

CAPCOM No, that's okay, we've got it. One thing you ought to know, we see stratification in O2 tanks 3 and we're currently about 60, that's 6 zero psi away from the SM limit. It may be that when you're LOS you might get an alarm on that, if so it's just the stratification. And that was O2 tank 3.

SPACECRAFT Okay O2 tank 3 and if we do get an alarm you're saying we can just note what it is but then ignore it.

CAPCOM That's correct.

SPACECRAFT And Houston Challenger, before the flight ECOM was requesting some picture of the water, supply water dump if we got anything and I haven't been taking any pictures since we've been dumping and I haven't seen anything unusual back there.

CAPCOM Okay, I guess - -

END OF TAPE

SPACECRAFT Before the flight, ECOM was requesting some pictures of the water, supply water dump if we got anything and I haven't been taking 'cause we've been dumping and I haven't seen anything unusual back there.

CAPCOM Okay, I guess nothing to do but keep your eyes on it.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead.

CAPCOM Go ahead.

SPACECRAFT Roger, the people on the middeck had me look out the side hatch, it looks like a snow storm. So I'll go down and try and get a picture of it for him.

CAPCOM Internal vigilance, that's what you need.

SPACECRAFT Must be.

CAPCOM Challenger, we're going LOS in 30 seconds, talk to you again through Yarragadee at 2147.

SPACECRAFT Roger, Houston, see you there.

CAPCOM Challenger, this is Houston with you through Yarragadee for 8 minutes.

SPACECRAFT Roger, Houston, loud and clear. Hi, Mary, how are you doing?

CAPCOM Fine, thanks, Dick. How are you?

SPACECRAFT Shoot, we've never had so much fun in all our - -

CAPCOM I believe that.

SPACECRAFT And Houston, CDR.

CAPCOM Go ahead, Dick.

SPACECRAFT Roger, just thought we'd bring you up to date. We think we've, we're pretty much up to speed. The one thing we have not gotten around to doing this morning is the taking a look at the cabin fan filter and Dan and I are going to that here. It's been a little bit busy downstairs with us trying to set up cameras and so forth ahead of time for the deploy but we'll get to that, other than that I think we've done everything that we know of that's in the checklist.

CAPCOM We concur with that. You look good to us, Dick.

SPACECRAFT Okay.

SPACECRAFT And Houston, CDR.

CAPCOM Go ahead.

CAPCOM Go ahead, CDR.

SPACECRAFT Roger, while we had a second here, I thought I would let you know that during the evening last night Dan and I wake up for a rev or so in the middle in the night and the thing that woke me wide awake was I looked out the top window and saw two active volcanoes on - and the time was about 1529 MET. I'm fairly certain it was in the vicinity of New Guinea and we, it was the middle of the night and all the other guys were sleeping so I did not photograph those, however, later on while we were up, we did get a lot of photography or a lot of observations of the South Pacific and of the South Pacific Islands and also we think we got a couple of pictures of Henderson Island.

CAPCOM That must be really fine to be able to see those things from up there.

SPACECRAFT Unbelievable.

SPACECRAFT We also got our first look at the northern portion of the Great Barrier reef although again we took a couple of pictures that I just couldn't stand not to take but we didn't take a lot because we didn't want to wake folks up.

CAPCOM One note which we did have just to remind you about with volcanoes is to look around for any discolored water in the vicinity and photograph that if possible.

SPACECRAFT Roger that.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t61j 243:04:24 8/31/83 PAGE 1

CAPCOM Challenger, Houston, in about 30 seconds we'll have a minute break between Yarragadee and Orroal. Challenger, Houston back with you through Orroal for three minutes.

SPACECRAFT Roger, Houston and we think we're looking straight down at the great sandy desert of Australia, whatever it is, it is beautiful and we're taking a couple of pictures.

CAPCOM I've spent some time there myself, it is beautiful. Challenger, we're LOS in 30 seconds, we'll pick you up through TDRS at 22 12. Challenger, Houston's, with you through TDRS.

SPACECRAFT Roger, Houston.

CAPCOM Challenger, Houston, we see tank bravo and water at zero percent so it's okay to stop the water dump any time.

SPACECRAFT Roger. Houston, CDR.

CAPCOM Go ahead. Go ahead, Dick.

SPACECRAFT We're getting ready to clean the cabin fan filter real quick and the cabin fan is going to go off momentarily and that's the reason why.

CAPCOM Okay. Thanks for the warning.

PAO Mission Control Houston, 22 hours 25 minutes mission elapsed time. I have a advisory my mission commander Dick Truly as a courtesy to the flight control team to warn them ahead of time that the cabin fan was going to be inactivated while they clean some filters, of course if the control team had to - -

SPACECRAFT MS1 what site would you like this PAM ASE thermal test over.

CAPCOM Stand by. We're thinking about doing it over Mila. We'll start the Mila pass at 22 32 and we'll give you a call when we're configured to get the data.

SPACECRAFT Okay, we'll have the SCA's powered up and Guy will be standing by to do the item 1.

CAPCOM Okay, that's good.

PAO This is Mission Control Houston again, continuing that advisory by Dick Truly as a courtesy to the flight control team. Since if the flight controllers had to observed that cabin fan spontaneously stopping without any warning, it would have been the source for some rather extreme concern here in the

control center. Mission Specialist Dale Gardner asking the control team preference for a, a site over which to perform check out the airborne support equipment of the payload assist module. That will represent the leading edge of deployment preparations this morning. The thermal testing to be performed on the checklist by Mission Specialist Guy Bluford. And Mission Specialist Dale Gardner will be doing some TV setup and preparation to make a video tape record of that deployment sequence and determination will be to have that thermal check of the airborne support equipment performed as we overfly Mila so that the flight control team here and the payload operations control center and the INSAT satellite control center, (garble) can watch that data. Mission elapsed time 22 hours 28 minutes, this is Mission Control Houston.

CAPCOM Challenger, Houston's with you through the states.

SPACECRAFT Roger, Houston and the cabin fan is back up to (garble) it was, the filter was not terribly dirty was it was, with the trouble it took to get to it, Dr. Bill had his, his EOG chair taped to the floor right on top of it, so since we took the trouble to undo all that we went ahead and cleaned it anyway.

CAPCOM Okay. Challenger, Houston, we're going LOS in 20 seconds in about 2 minutes we'll pick you up again at Mila.

SPACECRAFT (garble) we'll be ready for the PAM checks.

CAPCOM And we'll give you a call on that. Challenger, Houston's got you through Mila and we're ready for the test.

SPACECRAFT Roger, Houston and we're going to (garble) now.

PAO This is Mission Control Houston, at 22 hours 34 minutes. The data now being looked at here in the control center on the downlink of this payload assist module heat test, thermal test. And the payloads officer Mike Brekke indicating that all the temperatures being observed are within normal ranges and data verifies that the PAM will be within thermal tolerances for deployment.

CAPCOM Challenger, Houston, we've got all the data we need from the SCA so you can go ahead and terminate the test if you like.

SPACECRAFT Roger, copy.

CAPCOM Challenger, Houston, we're going LOS now, lose you for about 3 minutes, pick you up at Dakar at 22 47.

SPACECRAFT Roger, see you then.

STS-8 AIR/GROUND TRANSCRIPT t61j 243:04:24 8/31/83 PAGE 3

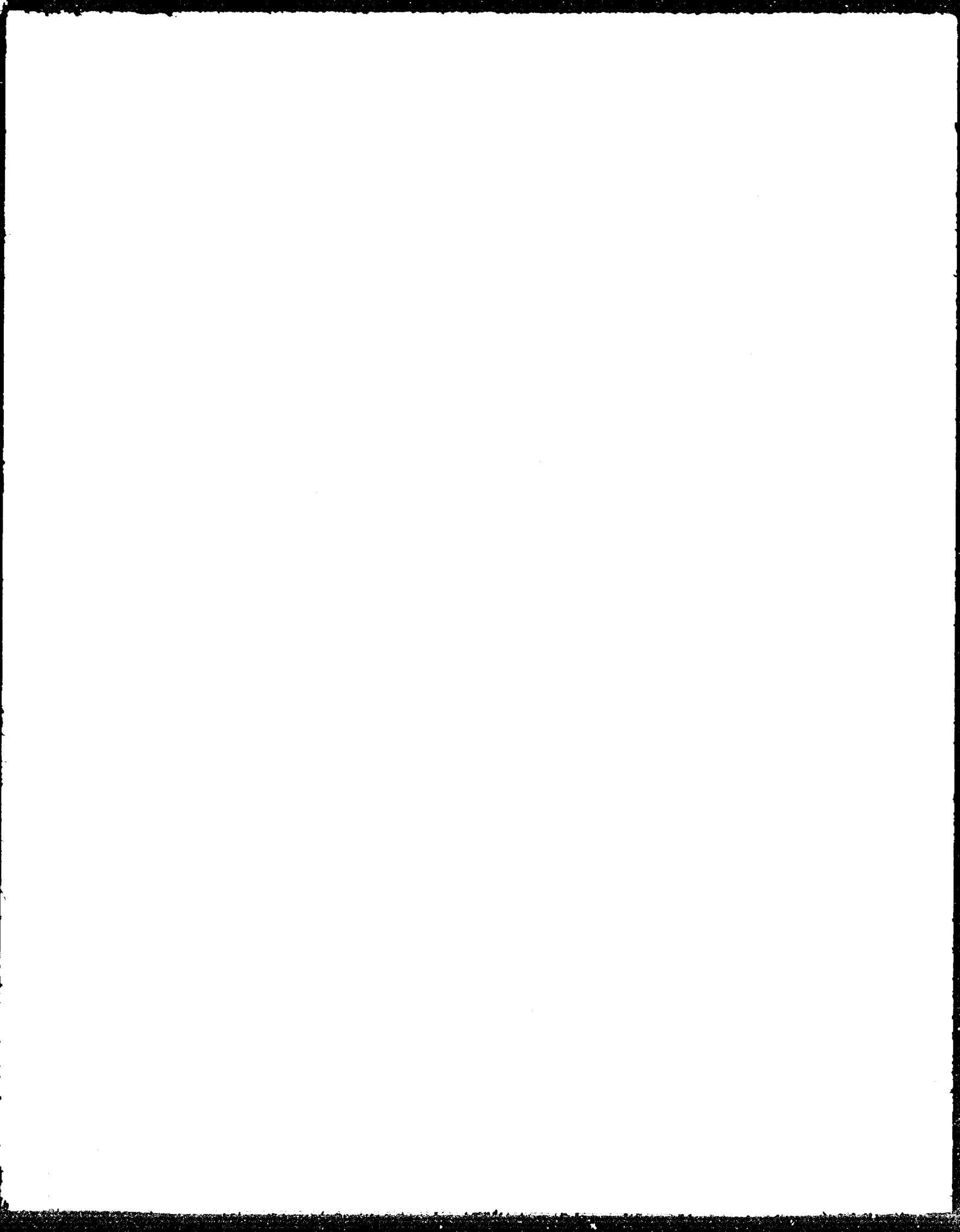
CAPCOM Challenger, Houston, with you through Dakar for 9
minutes.

SPACECRAFT Loud and clear, Jeff.

SPACECRAFT Roger, Houston, Challenger reads you loud and
clear.

CAPCOM Okay, and we read you - -

END OF TAPE



STS-8 AIR/GROUND TRANSCRIPT t62j 243:00:00 8/31/83 PAGE 1

SPACECRAFT Roger Houston, Challenger reads you loud and clear.

CAPCOM Okay and we read you fine. Challenger, Houston, we're going to be uplinking you a state vector momentarily.

SPACECRAFT Roger, Jeff.

CAPCOM Challenger, Houston, we switched over to TDRS.

SPACECRAFT Roger.

CAPCOM Challenger, Houston, 30 seconds LOS, pick you up through IOS, 2308.

SPACECRAFT Roger, Houston.

PAO This is Mission Control at Houston at 23 hours, 6 minutes into the flight of STS-8. It's fairly quiet onboard the vehicle with not a lot of air to ground transmission as the crew's involved in a variety of activities. Commander Dick Truly is performing some medical DTOs, DSOs, details secondary objectives with Dr. Bill Thornton in the mid-deck of the vehicle, one of those being the visual acuity test where some measurements are made of focusing ability, using a target pasted to the wall of the mid-deck. Pilot Dan Brandenstein is sending up some 16 mm cameras out the port windows, I'm sorry, out the aft windows of the aft flight deck to document the PAM deployment sequence later this morning. Mission Specialist Dale Gardner is similarly setting up TV cameras for some downlink video which we'll be getting, illustrating some of the INSAT checkout procedures. The deployment will not be downlinked live (garble) acquired video tape of that vent and down play it, downlink it, later in the mission this morning for replay around 3 o'clock Central Time. And Mission Specialist Guy Bluford has been performing the thermal tests of the payload assist module all those temperatures. We're within normal constraints ranging at various locations on the PAM from 66 to 78 degrees Fahrenheit, and all those were certainly within acceptable limits. Guy Bluford will be loading the pulse code modulator master unit with some orbit operations software and soon the crew will dedicate itself to a review of deployment procedures in advance of entering the deployment and checkout activities prior to the PAM deployment. And we are now AOS through Indian Ocean station at 23 hours 9 minutes this is Shuttle Mission Control.

CAPCOM Challenger, Houston with you through IOS for 5 minutes.

SPACECRAFT Roger Houston, you're loud and clear, we're hard at taking Earth resources photos right now, or part of the crew is. We got some good shots of sight number 5. And Jeff, how do you read MSI, I'm on one of these ED duplex units right now, I

STS-8 AIR/GROUND TRANSCRIPT t62j 243:00:00 8/31/83 PAGE 2

gave Richard the E unit that I was on yesterday, how do you copy me?

CAPCOM I can understand what you say pretty well, there's a, I guess a marginal bit of echo in there, but you're pretty readable.

SPACECRAFT Okay, well I'll stay on this one then for the deploy.

CAPCOM That sounded much better, the second one. Bill, I don't want to confuse you on that, I thought you had changed between your first call and your second call, it turned out we had changed our reception. You sound real good now.

SPACECRAFT Okay, thanks, Jeff.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t63j 243:05:27 8/31/83 PAGE 1

SPACECRAFT Okay, thanks, Jeff.

CAPCOM Challenger, we're 30 seconds LOS, talk to you through Yarragadee in 10 minutes at 23:23.

SPACECRAFT Roger, see you there. We are just getting sites 6 alpha, Jeff.

CAPCOM Okay, I hope you are getting some good pictures.

PAO This is Mission Control at 23 hours, 15 minutes mission elapsed time. The FDO, Flight Dynamic Officer, Brian Jones has just reported to Flight Director, Randy Stone, that the preliminary deploy pad issued earlier - -

END OF TAPE

PAO This is Mission Control at 23 hours 15 minutes mission elapsed time. The FDO, flight dynamics officer, Brian Jones, has just reported to the flight director, Randy Stone that the preliminary deploy pad issued earlier will be unchanged and that will in fact be the actual deploy time. So the expected deploy time for INSAT will be 1 day 1 hour 16 minutes 54 seconds mission elapsed time. We're currently LOS, we'll acquire again in about 7 minutes through Yarragadee. This is Mission Control Houston.

CAPCOM Challenger, Houston with you through Yarragadee for eight minutes.

SPACECRAFT Well Jeff, we're all ready to deploy a PAM, how are the lines between the states and the (garble) looking?

CAPCOM Payloads tell us the voice and the data lines are looking good and we can also tell you at this time that no update will be necessary for the deploy pad which I read you earlier.

SPACECRAFT Good news.

CAPCOM Challenger, would you like a SEP pad now or at Hawaii?

SPACECRAFT Why don't you stand by because (garble) away from his seat for a few minutes, he'll be right back.

CAPCOM Sure, we have about 5 minutes left here and there's a 20 minute LOS and then we'll get you at Hawaii.

SPACECRAFT Yes, hold on, he's getting in position.

SPACECRAFT Okay, Jeff, we have three books out with three pencils poised over them. Go ahead.

CAPCOM Boy, I don't know if I, that's 3 to 1 against me but here goes. You're both OMS, TB roll is 180, trim is plus 0.02, minus 5.7, plus 5.7, weight 219 602. Your TIG is 1 day slash 01:31:54.0, your peg 7 target is plus 0010.6. All balls minus 003.0, your burn attitude 336 049 015, delta V total 0011.0, TIGO 00:06, TIGO X plus 0010.61; Y all balls, Z plus 002.97. target at apogee 167, targeted at perigee plus 159. And the helium press vapor isols alpha open, bravo closed. Read back.

SPACECRAFT Okay, it's both OMS 180, plus 0.2, minus 5.7, plus 5.7; 219 602, 1013154.0, plus 10.6, all balls, minus 3.0, 56 049 015, 11.0:06, plus 10.61, all balls, plus 2.97. 167 plus 159, alpha open, bravo closed.

STS-8 AIR/GROUND TRANSCRIPT t64j 243:05:45 8/31/83 PAGE 2

CAPCOM Readback is all correct except that we had some static when you gave us the burn attitude roll, could you repeat that please?

SPACECRAFT Roger.

CAPCOM Well looks like we got cut out again, could you let us have the burn attitude roll, please.

SPACECRAFT Okay, 336.

CAPCOM The third time lucky, readback is correct.

SPACECRAFT Okay.

CAPCOM Challenger, we're 30 seconds LOS, we'll lose you for about 20 minutes and pick you up at Hawaii at 23 51.

SPACECRAFT Roger, Houston.

PAO This is Mission Control Houston, at 23 hours 32 minutes mission elapsed time. We have a LOS period of about 20 minutes now before we reaquire through - -

END OF TAPE

SPACECRAFT Roger, Houston.

PAO This is Mission Houston at 23 hours, 32 minutes mission elapsed time. We have a LOS period of about 20 minutes now before we reacquire through Hawaii on orbit 17. Challenger right now over the heart of Australia, and the crew is presently reviewing it's deploy procedures, the crew station assignments for predeploy, through deploy are to be as follows. Mission Commander Dick Truly will be at the aft starboard station, the maneuver station, Pilot Dan Brandenstein will be in the forward right seat, Mission Specialist Dale Gardner will be in the forward left seat, normally the Commander's seat and Mission Specialist Guy Bluford will be at the aft crew station, at the port or payload station. In preparation for the OMS separation maneuver the Commander Dick Truly and Mission Specialist Dale Gardner will exchange positions and Truly will get into the Commander's seat and Dale Gardner will go to the aft starboard station. During that most recent pass, CAPCOM Jeff Hoffman advised the crew of a Tig, or ignition time for the separation burn. Let me repeat all those numbers here, the deploy time for INSAT is to be 1 day, 1 hours 16 minutes, 54 seconds, time of ignition for the OMS separation burn is scheduled for 1 day, 1 hour, 31 minutes, 54 seconds. At mission elapsed time, 23 hours 34 minutes this is Mission Control Houston.

CAPCOM Challenger, Houston, with you through Hawaii for 4 minutes.

SPACECRAFT Roger, Houston, read you loud and clear.

CAPCOM In a little while we'll have some PEG 7 targets coming up to you.

SPACECRAFT Okay.

CAPCOM Challenger, Houston, we're about 20 seconds LOS, talk to you through Buckhorn in 5 minutes at 00.

SPACECRAFT Roger, Jeff, we'll see you at Buckhorn.

CAPCOM And we're going to be looking for the DCM to be loaded with the deploy SPECS.

SPACECRAFT Roger, you bet.

CAPCOM Challenger, Houston with you through Buckhorn.

SPACECRAFT Loud and clear, you should have one - -

CAPCOM Okay, we confirm that, thanks.

STS-8 AIR/GROUND TRANSCRIPT t65j 243:06:03 08/31/83 PAGE 2

PAO This is Mission Control Houston, STS-8 is now in it's second day, mission elapsed time 1 day 0 hours 0 minutes. This is Mission Control Houston, standing by for downlink TV and while we're waiting for the crew to configure the elbow camera for the best views of the predeploy check out.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead, Houston.

CAPCOM We're all set up to receive some TV here. INCO would like you to configure the elbow camera.

SPACECRAFT Okay. We have it all aimed already, I did that previously, Jeff.

CAPCOM Okay that sounds good.

SPACECRAFT You want to do it here you say, at Buckhorn?

CAPCOM While we're over Goldstone, yes, and Goldstone's configured for TV.

SPACECRAFT I need to get some payload bay lights on for you then, stand by.

PAO This is Mission Control Houston, 1 day, 0 hours, 3 minutes. We'll have TV momentarily. That's Mission Specialist Dale Gardner at the aft crew station.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t66j 243:06:34 8/31/83 PAGE 1

CAPCOM Okay, Challenger we see a picture coming down from inside the cabin. Looks like you guys are all in full control there.

SPACECRAFT Just waiting for the lights to come up a little brighter and I'll give you the elbow, Jeff.

CAPCOM Okay, looking forward to seeing it.

SPACECRAFT Okay, there you go. You are seeing by the edge of the PFTA and just seeing the port side of the moveable part of the sunshield and a little bit of the port of the stationary part of the sunshield.

CAPCOM Looks like a strange bit of modern architecture.

SPACECRAFT You got to get used to it looking at it at this angle.

CAPCOM Both of them are in there, working hard, no rest for the weary.

PAO Mission Control, Houston, a brief keyhole here in TV coverage and we'll pick up again through - -

CAPCOM We're handing over right now, we're seeing some vertical color bars. I assume that's not what you guys are doing up there.

SPACECRAFT Okay and Houston, CDR, you can check our DAPS, the A1 and B4.

CAPCOM Stand by.

SPACECRAFT And, Jeff, I've got to get busy in STA - -

CAPCOM Okay, INCO is ready for that. We are watching the gimbal check, Dick.

SPACECRAFT STA power coming on now.

CAPCOM Okay, Dale, and we have a picture back and did you copy that we are ready for the gimbal check.

SPACECRAFT Okay, stand by and we'll be going Ops 8 momentarily, I mean 202 momentarily.

SPACECRAFT Do ya'll have the message, Jeff, it's from our port mode?

CAPCOM Okay, we're following you, Dale.

STS-8 AIR/GROUND TRANSCRIPT t66j 243:06:34 8/31/83 PAGE 2

SPACECRAFT Here's the port (garble) going back. Back up STA looks okay. And the secondary gimbal check looked good onboard, primary's in progress.

PAO This is Mission Control, Houston, we are looking at Mission Specialist, Colonel Guy Bluford in the center of the screen, Commander, Dick Truley to the left and to the left of the screen, Pilot Dan Brandenstein. Gimbal checks being performed now to verify the flight control worthiness of the INSAT payload.

SPACECRAFT Okay, Houston, both gimbal checks looked good onboard, the targets look good, we fixed up the (garble), we're ready to go back to 201.

CAPCOM Okay, Dick, we've been watching from down here and everything looks good to us with the gimbals.

SPACECRAFT Okay, and Jeff, Guy's on the bottom of page 3-6.

CAPCOM Okay, we're watching.

PAO Mission Control, Houston looking at the aft crew station once again, can see Mission Specialist, Dale Gardner to the right of the screen, I was standing by for the views of opening of the sunshield which should occur momentarily.

SPACECRAFT Going to 3-7A, Insat activation.

CAPCOM With you.

PAO This portion verification intended to affirm the satellite's capability to receive and transmit signals.

SPACECRAFT Okay, Houston, here we go with opening the sunshield.

CAPCOM We're watching.

SPACECRAFT (garble)

PAO This view being provided by the shoulder camera, elbow camera on the remote manipulator system and is sort of a side look at the payload bay.

SPACECRAFT Movement stopped.

PAO Sunshield now open.

SPACECRAFT Hey Houston, looks like we got 2 micro switches indicating open.

CAPCOM We confirm it, that's what we see down here.

STS-8 AIR/GROUND TRANSCRIPT t66j 243:06:34 8/31/83 PAGE 3

CAPCOM Looks like you've moved out of range of Mila, we've lost the picture, we're still with you through Bermuda for another 3 minutes.

SPACECRAFT Understand, Houston and we have - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t67j 243:06:47 8/31/83 PAGE 1

CAPCOM We confirm it, that's what we see down here. Looks like you've moved out of range of Mila and we've lost a picture, we're still with you through Bermuda for another 3 minutes.

SPACECRAFT Understand, Houston, and we're putting external power on the Insat right now.

CAPCOM Okay, we're watching the data down here.

PAO Mission Control Houston, we're now less than an hour away from scheduled deploy of INSAT. And mission elapsed time is 1 day 0 hours 17 minutes.

SPACECRAFT Well, Jeff, Guy is doing good work today, the satellite's on and we're flowing data.

CAPCOM Sounds good. Challenger we're 30 seconds LOS, speak to you through Dakar in about 4 minutes, that's 023.

SPACECRAFT Roger, I understand Houston, and we just turned the batteries on and the TWT's have just come on.

PAO Shuttle Mission Control, at this point in the payload checkout procedure, virtually all the activities that are performed by the crew onboard with the mission control team and the payloads operations center here in Houston as well as the INSAT satellite control facility in (garble) India. Our monitoring of checkouts preparatory to cargo injection of the Orbiter flight crew verifies the spacecraft through a series of checks before they configure that payload for deployment. Satellite will be spun up to a rate of about 40 rpm, 40 revolutions per minute is nominal but anything between 36 and 44 rpm is acceptable. Communications in other subsystems will be checked by means of an electrical and communications harness to the flight crew cabin. Payload ordinance items will then be armed and all the checks performed remotely from the flight crew cabin, payload data are transmitted from the Orbiter to mission control center here in Houston for analysis and verification and in about 10 minutes from now the mission control team and payload operation center will verify the validity of that data and give the crew a go or no/go for deploy. That deploy will occur nominally in about 55 minutes from now. There will be a final preinjection sequence that lasts about 30 minutes, the orbital, Orbiter will be maneuvered into a deployment attitude, the payload bay will be facing away from the surface of the Earth the bottom of the Space Shuttle will be toward Earth and the nose of the Orbiter will be facing the velocity vector. We're just about a minute and a half away from acquisition of signal through Dakar. At 1 day 0 hours 22 minutes, this is Mission Control Houston.

STS-8 AIR/GROUND TRANSCRIPT t67j 243:06:47 8/31/83 PAGE 2

PAO This is Mission Control Houston, Payloads Officer Rob Kelso has reported to the flight director Randy Stone that he has been advised by the mission, the satellite control facility in (garble) that they got a good stream of data during that, during that test, that most recent test and they will be looking for transmitters on when we acquire at Dakar.

CAPCOM Challenger, Houston, with you through Dakar for 8 minutes.

SPACECRAFT Roger, Houston, read you loud and clear. We got the transmitters on and the satellite still looks good.

CAPCOM Good news.

PAO This is Mission Control Houston, in about 5 minutes NASA select will feature playback of the INSAT predeploy video. And we're standing by for some good news to uplink to the vehicle about a go for deployment.

CAPCOM Challenger, Houston, at this time - -

END OF TAPE

PAO And we are standing by for some good news to uplink to the vehicle about a go for deployment.

CAPCOM Challenger, Houston, at this time the PAM, the INSAT and the ground network are all GO.

SPACECRAFT Understand Houston, copy, we're GO for deploy.

CAPCOM You are GO.

SPACECRAFT Roger, Houston, thanks a lot, that's good news.

SPACECRAFT Okay, Jeff, we got a little light in the bay now and I can see the satellite a little more clearly. The C-band antenna which is in on top looks in good shape. I can see the VHR (garble) over on the port side. It looks to be in good shape and I can see the solar array hinge points on the forward and over on the starboard side. Everything looks in good shape, (garble) looks fine.

CAPCOM Well, we'll enjoy that vicariously through your words, thanks.

PAO This is Mission Control, Houston, the crew given a go for deploy at mission elapsed time, 1 day, 0 hours, 28 minutes that based on an advisory from the payload's officer Rob Kelso that he was informed by the payload operations control center in Houston and by INSAT satellite control facility in Hasan, India that the transmitter data and the ground support network and all elements participating in supporting deployment are receiving very positive indications from the vehicle and all their data that systems are performing nominally and are in good shape for deployment. And deployment would occur nominally 45 minutes from now. And 15 minutes later, the Orbiter would perform a separation burn, the burn of the OMS engine. On orbit 17 at mission elapsed time, 1 day, 0 hours, 31 minutes, this is Mission Control, Houston.

SPACECRAFT Jeff, are you going to be looking at us any more with these flight deck cameras or can we go ahead and turn them off?

CAPCOM We have no more TV passes between now and the deploy.

SPACECRAFT Okay, we'll secure those then, thank you.

PAO This is Mission Control, Houston, NASA select TV is now providing a playback of the predeploy video. And in a few more minutes, the Challenger will perform an automatic maneuver to the deploy attitude. This will be the 5th deployment of a satellite using the payload assist module from the Space

STS-8 AIR/GROUND TRANSCRIPT t68j 243:07:00 8/31/83 PAGE 2

Shuttle. The payload assist module has been in the use since late 1980 in a variety of unmanned expendable launch vehicles. It's first few supported the space transportation system, ones on STS-5 when the satellite business system's satellite and ANIK communication satellite were launched from the spaceship, Columbia on November 11th and November 12th, respectively, last year and earlier this year, the Challenger launched another ANIK and Indonesia satellite, PALAPA on June 18th and 19th of this year. Mission elapsed time, 1 day, 0 hours, 35 minutes, this is Mission Control, Houston.

PAO This is Mission Control, Houston, Flight Director, Randy Stone just checked with all console positions here and asked for a GO/NO GO votes for deploy and received an anonomous go for oppositions. Mission elapsed time, 1 day, 0 hours, 40 minutes and deployment scheduled to occur in approximately 36 minutes. This is Mission Control, Houston, we're expecting to give the crew a go for deployment during this pass although there will be a voice pass available through Yarragadee - -

END OF TAPE

PAO This is Mission Control Houston, we're expecting to give the crew a go for deployment during this pass although there will be a voice pass available through Yarragadee and Yarragadee will be the last...

CAPCOM Challenger, we're going off TDRS in 30 seconds, we'll still be with you through Botswana and you are still GO, PAM INSAT and ground.

SPACECRAFT Understand, we're still GO, things look good onboard, we'll see you later.

CAPCOM Great.

PAO That communications from Mission Specialist Guy Bluford, we're about 3 and a half minutes away from LOS through Botswana and then we will require voice only to the ground station at Yarragadee. The Yarragadee pass will be the last voice contact we have with the Challenger crew prior to deployment. Mission elapse time now, 1 day 0 hours 43 minutes. This is Mission Control Houston.

CAPCOM Challenger, we're 30 seconds LOS, talk to you through Yarragadee at 0 plus 59 in about 12 minutes.

SPACECRAFT Roger, Houston, and we'll see you later and everything still looks good onboard.

PAO This is Mission Control Houston, at 1 day 0 hours 50 minutes mission elapsed time, we've lost signal through Botswana, we'll acquire again voice only through Yarragadee in about 8 minutes. We're 25 minutes from deployment. The sequence of events immediately prior to deployment will be as follows. The INSAT mission control center in Hasan, India will give the mission control center in Houston a final go for deploy. The mission control center will of course relay that advisory to the crew, at mission elapsed time, 1 day 1 hour 1 minute, the crew will begin a mechanical sequence start, in 3 minutes (garble) they will initiate spinup of the spacecraft, nominal spin rate of 40 revolutions per minute is expected, anything between 36 and 44 rpm's is acceptable. Prior to these events, Mission Commander Dick Truly will have initiate an automatic maneuver sequence to place the Challenger in the deployment attitude. The payload will be placed on internal power at 1 day 1 hour 11 minutes mission elapsed time. 1 day 1 hour 13 minutes mission elapsed time will initiate terminal sequence start and looking forward to deployment at 1 day 1 hour 16 minutes 54 seconds mission elapsed time. Terminal sequence start, occurs as follows, Mission Specialist Guy Bluford will initiate that terminal sequence start by some keystrokes on that, on the computer at the commanders position, the forward left front seat in Challenger. And subsequently he will, that will occur about 3 minutes before

STS-8 AIR/GROUND TRANSCRIPT t69j 243:07:12 8/31/83 PAGE 2

deployment subsequently he will do a prearm keystroke sequence. Meanwhile Mission Specialist, Mission Specialist Dale Gardner will arm the payload assist module from his position at the aft port payload station.

END OF TAPE

PAO ...will arm the payload assist module from his position at the aft port payload station. At his position in the commanders seat, Mission Specialist Guy Bluford will then perform some keystrokes to arm and fire the deployment sequence. At the aft crew station Dale Gardner will then take some actions to deactivate the air sea airborne support equipment and PAM heaters, the crew will then change positions and prepare for the separation burn of the orbital maneuvering system. The payload dialog continues to indicate nominal functions, all the participants and all the systems, the ground network, the spacecraft and the payload assist module are all go for deployment, mission control teams and all the players here are ready support and looking forward to deployment 20 minutes from now. Mission elapse time presently 1 day 0 hours 55 minutes and AOS through Yarragadee in about 3 minutes. This is Mission Control Houston. This is Mission Control Houston, we're less than a minute away from acquisition of signal and payloads officer Rob Kelso has just advised the flight director that the mission, satellite control facility at Hasan and the payloads operations center here in Houston are both go for deploy. And we should have voice momentarily at mission elapsed time 1 day 0 hours 59 minutes, this is Mission Control Houston.

CAPCOM Challenger, Houston with you for, through Yarragadee for 8 minutes, the PAM, the INSAT and the network are still go and we'll just stand by now, and be quite and listen to anything you want to say to us.

SPACECRAFT Roger, Houston, (garble).

CAPCOM That's good news.

SPACECRAFT And the maneuvers (garble) attitude now.

CAPCOM Okay, Dick.

SPACECRAFT Okay, Jeff, starboards staight out, is out forwards restraint is coming.

CAPCOM Okay, we're sticking with you.

PAO The report of those two restraints having been removed verifies that the, the crew has initiated mechanical sequence start. The first event following mechanical start...

SPACECRAFT (Garble) is coming up.

PAO Following this, Mission Control Houston, following mechanical sequence start...

SPACECRAFT (garble) stabilized. (Garble)

STS-8 AIR/GROUND TRANSCRIPT t70j 243:07:57 8/31/83 Page 2

CAPCOM Great, it may be a lot easier than in the sims but I bet the visual is a lot better.

SPACECRAFT Okay, Jeff, I can see all sides of the spacecraft now rotating by both solar panels, the C S-band and the solar cell DHR sides all look good.

CAPCOM Thanks for the report.

PAO This is Mission Control Houston, Payloads Officer Rob Kelso shown center of the screen on NASA select now, just verified that the mechanical sequence start appears to have been completed up to the point where the satellite goes on internal power.

CAPCOM Challenger, we are 45 seconds to LOS, hope everything continues as well as its gone so far, have a real good deploy and we'll look forward to talking to you at Hawaii 1 plus 24.

SPACECRAFT Copy, Houston and right now we're still looking good in the cockpit and understand we're go for deploy.

CAPCOM Great, you are go for deploy and have a good one.

END OF TAPE

SPACECRAFT Okay, copy Houston, and right now we're still looking good in the cockpit and understand we're go for deploy.

CAPCOM Right, you are go for deploy and have a good one.

PAO This is Mission Control, Houston at 1 day, 1 hour, 7 minutes mission elapsed time, we've had lost of signal through Yarragadee. We're about 9 minutes away from deployment and it's going to occur out of contact with the ground. The next advisory we'll have from the crew will be at Hawaii in about 17 minutes and that will be the first indication on the level of success we will have enjoyed with this deployment sequence. Once the crew initiated mechanical sequence start, the subsequent events were at 32 seconds opening of the sunshield. A minute and 20 seconds later, the starboard restraint would have been removed at 2 minutes and 8 seconds following mechanical sequence start the port restraint would be removed and those 2 events were reported by our Mission Specialist, Dale Gardner. Then at 2 minutes and 52 seconds after the start of the mechanical sequence the spin rate would have begun and should have achieved a rate of 40 revolutions per minute and Gardner did verify that those, the spin rate had been initiated and described the appearance of the payload as it rotated on the spin platform. Ejection from the payload is expected to occur at mission elapsed time, 1 day, 1 hour, 16 minutes, 54 seconds and orbit 17 marvin camp, marman clamp will be released by explosive volt bolts and the payload which will be spinning using centrifical force to stabilize itself as does the gyro. The payload will be popped out of the payload bay by a series of springs and will separate from the payload bay at approximately at a rate of approximately 3 feet per second, 15 minutes after we separate, the Orbiter will perform a separation burn. Prior to the PAM's perigee burn, the Orbiter is going to move to an attitude that is intended to protect the windows from erosion by the PAM exhaust plume. The Orbiter will be nosed forward with the payload bay away from the earth. The PAM will be ahead of and slightly below the Orbiter with the orbiter pitched up 50 degrees to a common line of sight. We are about 6 1/2 minutes away from payload deployment and sitting and waiting for the next voice contact which will occur in 14 minutes throught the ground station at Hawaii. Mission elapsed time, 1 day, 1 hour, 10 minutes, Mission Control, Houston.

PAO This is Mission Control, Houston at mission elapsed time, 1 day, 1 hour, 15 minutes, the NASA select TV right now is showing a few of the payload officers, Rob Kelso is obviously a prominent participant in the process of preparing and deploying the INSAT and the payload assist module and he is clearly anxiously looking forward to receiving data through the ground station at Hawaii to indicate whether the deployment has in fact occurred as he expected. And we will have acquisition signal

STS-8 AIR/GROUND TRANSCRIPT t71j GMT 243:07:25 8/31/83 PAGE 2

through Hawaii in approximately 8 minutes. And deployment is to occur in roughly 30 seconds from now.

END OF TAPE

PAO And we will have acquisition of signal through Hawaii in approximately 8 minutes. And deployment is to occur in roughly 30 seconds from now. This is Shuttle Mission Control at 1 day 1 hour 17 minutes, nominal deployment of the INSAT should have occurred just about a minute ago and assuming all events have occurred on schedule the crew should now be repositioning themselves for preparation for an OMS burn which is to occur roughly 14 minutes from now. That scheduled OMS burn is of planned duration of 6 minutes 11, 6 minute, 6 second burn changing velocity by 11 feet per second and producing an orbit measuring approximately 166 by 160 nautical miles. Of the PAM D burn is to occur at mission elapsed time of roughly 1 day 2 hours 2 minutes and the duration of that burn is 85 seconds. This is Mission Control Houston, at 1 day 1 hour 22 minutes mission elapsed time. Just about 2 and a half minutes from acquisition of signal through Hawaii and first advisory as to the success of the PAM deployment. Also the OMS separation burn will begin assuming nominal operation at that point, that OMS burn will occur in site of the ground station at Hawaii. The crew will have recorded the PAM deployment and video tape and there will be a TV dump of that video at mission elapsed time 1 day 3 hours and playback at mission elapsed time 1 day 3 hours 20 minutes. And we should have voice contact in roughly one minute and looking forward to ignition for the separation burn to the OMS engines in about 8 and a half minutes. At mission elapsed time 1 day 1 hour 23 minutes, this is Mission Control Houston. Mission Control Houston, we have AOS and we'll have voice in a moment. Payloads officers says that PAMs deployment...

CAPCOM ...with you through Hawaii for about 8 minutes.

SPACECRAFT Roger, Houston, we're happy to let you know that INSAT was deployed on time with no anomalies and the satellite looked good.

CAPCOM Well that's excellent, good show you guys have maintained the Shuttle's perfect record. Do you have our report for us?

SPACECRAFT Roger, attitude's first, the current was roll 4 correction 345.07, pitch 72.79, yaw 335.30; rates in rolls 0 and pitch minus .002 and yaw plus .004.

CAPCOM That was rock solid then, real good.

SPACECRAFT And Houston, CDR, we're targeted for the burn, we're sitting at burn attitude, you can take a look. And Jeff you can report to the spacecraft folks that the spacecraft was alive and well when it left because at about a minute and 20 seconds, I saw the automatic neutration control system come on and I saw a couple of jets fire so it was looking good.

STS-8 AIR/GROUND TRANSCRIPT t72j 243:07:48 8/31/83 PAGE 2

CAPCOM Okay, that's good news, I guess that's the first time we've been able to see something like that, that's real, very good.

SPACECRAFT Also we had, we had no vibration in the vehicle that we could sense during the spin but we had a real good clunk that we all felt through the Orbiter's structure right at deploy.

CAPCOM Okay, that's interesting. Okay and from down here things look good for your burn.

END OF TAPE

SPACECRAFT . . . during the spin, but we had a real good klunk that we all felt through the Orbiter structure right at deploy.

CAPCOM Okay, that's interesting.

CAPCOM Okay, and from down here, things looked good for your burn.

SPACECRAFT Roger, Jeff. Thanks a lot for looking. We're a little over 4 1/2 minutes from Tig.

CAPCOM Challenger, Houston, on your OMS (garble) configuration.

SPACECRAFT Roger, and let me check the pad real quick. Roger, Jeff, we are A-open, B-closed. Thanks for checking.

CAPCOM You got it.

SPACECRAFT Okay, Houston, 2 engines (garble) are open.

CAPCOM Okay, we see your configuration, it looks good for the burn.

PAO This is Mission Control, Houston. Just seconds away from the OMS burn now and it should have just now started at 6 second duration. Propulsion Systems Engineer, Wayne (garble) reported both engines looked good and nominal (garble) cut off of that burn. And we are now waiting verification from the crew.

SPACECRAFT Okay, Houston, the burn looked nominal to us.

CAPCOM Okay, I think it looked down from here. We're 15 seconds LOS, we'll be out of touch for 2 minutes, then speak to you through the states.

SPACECRAFT And the satellite from the aft was spectacular to look at it.

CAPCOM That's what all the people say, I guess who are lucky enough to see it.

PAO This is Mission Control, Houston, we have had LOS, loss of signal through Hawaii. We'll reacquire through Buchhorn in about a minute and a half. That brief OMS burn intended to drive Challenger away from payload assist module so that when it performs its burn in about 45 minutes, it will be of adequate distance from the Challenger to preclude the chance of any plume damage to the vehicle.

CAPCOM Challenger, Houston's back with you through the states.

SPACECRAFT Roger, Houston and the post burn gimbal check looked good on both engines.

CAPCOM Thanks.

SPACECRAFT And Jeff, not wanting to rest of our laurels we're down in the middeck getting ready to get the CFES started.

CAPCOM Okay, you guys are keeping busy, great.

SPACECRAFT And Houston, CDR, I'm about start up the FES for the CFES operation for ECOM's benefit.

CAPCOM Okay, thanks for letting us know.

SPACECRAFT MS1.

CAPCOM Go ahead.

SPACECRAFT Okay, Jeff, you can pass on to the CFES people that the system's status check on sample #3 starting on 1 day, 1 hour, 43 minutes.

CAPCOM Okay, that was system status check on sample #1, did you say?

SPACECRAFT No, 1 and 2 were yesterday. I'm starting out with #3 today, Jeff. Hey Jeff, was there a message 10 on the teleprinter? I seemed to have skipped from 9 to 11, here.

CAPCOM Message #10 was an entry, stand by. Message #11 was an entry weather message and message 10 was not sent up, it was held, repeat; message 10 was not sent up.

SPACECRAFT Okay, great. I got the message right in my hand. Thank you.

CAPCOM Right.

CAPCOM Challenger, we're going to be handing over to TDRS in about a minute.

SPACECRAFT Roger, Houston.

CAPCOM Challenger, Houston with you through TDRS.

SPACECRAFT Roger, Houston, read you loud and clear.

END OF TAPE

CAPCOM Challenger, Houston, we're going to lose you in about 30 seconds, have about 3 minutes LOS and will pick you up at Botswana at 2 plus 14. We're going LOS pick you up at Botswana at 2 plus 14.

SPACECRAFT (garble)

CAPCOM Challenger, Houston, through Botswana 8 minutes. Okay.

SPACECRAFT Okay, we're right here at the end of the (garble) 1.6 delta P3 negative decimal 5 delta P 4 negative decimal 2.

CAPCOM Okay 1,2,3,4 are plus 3 plus 1.6 minus 0.5 minus 0.2.

SPACECRAFT Sounds good. Jeff, any word on the INSAT TKM?

CAPCOM Stand by. They're anticipating a fair amount of time, probably an hour or so before we get a report on acquisition of that, but we'll let you know as soon as we get the information.

SPACECRAFT Okay, Jeff, thanks alot.

CAPCOM Also at some point I have a flight note on the heat pipe experiment that's coming up in about 1 and a half orbits and there's not rush on that but anytime you want to take that we can talk about it.

SPACECRAFT Roger, let's wait until Dan is available.

CAPCOM Okay, fine.

SPACECRAFT Say, Jeff where are we right now.

CAPCOM Lets see, we're talking to you through Botswana, you're right over the sort of central part of the southern tip of Africa.

SPACECRAFT Rog, thank you.

CAPCOM And Dick I also have a note for you here concerning the COAS calibration if you have a minute to talk.

SPACECRAFT You bet, go ahead.

CAPCOM First of all, I can let you know the data that you got on flight day 1 from a COAS calibration was good but you had mentioned something about a feeling of having less than desired vehicle response or control in one of the axis. In reviewing the data, they found that the sense switch on the rear panel A6 was

in the minus X position instead of the minus Z position and therefore the roll in yaw axis got switched and it would be possible to repeat a COAS calibration later in the flight if you felt it was worthwhile, but I repeat the data that you got on flight day 1 was good.

SPACECRAFT Roger, understand and I appreciate, that probably does explain it and I don't think its necessary to repeat it, it would just make me feel good and no sense (garble) for that if we understand it, I appreciate it.

CAPCOM Okay, we'll pass that on.

SPACECRAFT And Jeff any word you got on the heat pipe, I'm ready to copy now.

CAPCOM Okay, I guess you, you reported, I'm not certain who it was, since it was in the other shift but there was a report that when you got at sunrise, one of the strips had turned from black to brown, one of the bottom strips, there's a couple of things on that. First of all, we want to know if its possible to identify which of the bottom strips had done that, and second of all the request was that before you start the evaluation here, before turning on any of the heaters that you observe the heat pipes and give a description of the colors and specifically to see if, if this phenoma is observed again when you come out from the darkness into the sunlight.

SPACECRAFT Okay, Jeff, well, I'll go down and check with Dale and show him this diagram so I get specifically (garble). He's the only one that saw it, and I've looked at it, I haven't seen it since then so.

CAPCOM Okay, its going to be orbit 20 at about 05 hours today, I guess that its called for in the CAP and I guess anytime you get a chance to look at it at any sunrise, it would be interesting to get the information if you see any of the tapes that are not black.

SPACECRAFT Okay, Jeff, Dan showed me the diagram, it was the bottom tape on both of the horizontal tapes on both the evaporator and the condensor and it was only that sunrise right after I came up to the flight deck after payload bay door opening. We've never seen it since then so, I think it was just some thermal conditioning that happens in the payload bay before the doors were open and then right afterwards.

CAPCOM Okay, thanks, I'm sure the experimenter will appreciate the information.

END OF TAPE

SPACECRAFT . . . I came up to the flight deck after payload bay door opening, we've never seen it since then so I think it was just some thermal condition that happened in the payload bay before the door was opened and right afterwards.

CAPCOM Okay, thanks, I'm sure the experimenter will appreciate the information.

CAPCOM Challenger, we are 30 seconds LOS, talk to you through Yarragadee in 13 minutes at 2 + 35.

SPACECRAFT Roger, Jim, see you there.

PAO This is Mission Control, Houston at 1 day, 2 hours, 22 minutes mission elapsed time. Loss of signal has occurred during that pass. Mission Specialist, Dale Gardner inquired as to the status of the PKM the perigee kick motor onboard the PAM which is to carry the INSAT payload to an upper, to a higher orbit. That burn was scheduled to occur at mission elapsed time, 1 day, 2 hours, 2 minutes or 45 minutes after deployment. I can't affirm whether it has occurred yet however, due to the fact that that burn is to be tracked by the satellite control facility in Hasan, India. And it will be another hour or so before there is a pass over the data acquisition sites adequate to verify that successful burn or the status of that burn. We'll acquire signal in about 12 minutes through Yarragadee at mission elapsed time, 1 day, 2 hours, 24 minutes, this is Mission Control, Houston.

CAPCOM Challenger, Houston with you through Yarragadee for 6 minutes. Challenger, Houston, how do you read?

CAPCOM Challenger, Houston, how do you read?

CAPCOM Challenger, Houston, how do you read?

CAPCOM Challenger, Houston, voice check?

CAPCOM Challenger, Houston, voice check?

SPACECRAFT Roger, Houston, read you loud and clear.

CAPCOM Okay, good. We were having a little trouble reaching you. Some good news for you, Hasan has acquired the spacecraft and they're preparing for a spacecraft PAM separation. So it looks like the burn went real well.

SPACECRAFT Outstanding, we're glad to hear that.

CAPCOM While we are on the subject of PAM and spacecraft, just to remind you that Hawaii has a VTR playback schedule.

STS-8 AIR/GROUND TRANSCRIPT t75j 243:08:52 8/31/83 PAGE 2

SPACECRAFT Roger, I understand and what do you want on the VTR playback? portion of the VTR playback, do you want?

CAPCOM Well of course, we're real interested in seeing the deploy and if you guys saw anything else that you think that we'd be interested in, well we'd like to see that too.

SPACECRAFT What I was going to do is set it up and maybe a couple minutes prior to deploy and then let you see it spin and then see the deploy itself.

CAPCOM Okay, we're expecting Hawaii at 3 hours, 0 minutes and it's about an 8 minute pass. You can use that for planning.

SPACECRAFT Okay, we'll do. And Houston, CDR, Guy is going to review the VTR, there is also, they also got on VTR the ignition of the OMS burn. It's not great shakes but it's kind of interesting to watch the OMS burn light and it follows the deploy on the tape and we'll make sure there is time for that.

CAPCOM Well that would be great if it's any where nearly as spectacular as some of the still pictures that we have seen of that.

SPACECRAFT Well it really isn't on the monitors we have but it is there and it's worth looking at probably and let's see other than - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t76j 243:09:12 8/31/83 PAGE 1

SPACECRAFT Well it really isn't on the monitors we have but it is there and it's worth looking at probably. And let's see, the CFES is going well, the, we're in attitude, the Ku band - -

CAPCOM Break, break, Dick we're 10 seconds LOS, talk to you at Guam at 2 plus 47.

SPACECRAFT Completion and I've got the times on that and are we going to delete the interconnect to OMS to RCS that's listed there in about 30 or so?

CAPCOM That's affirm, there is no interconnect, we're going LOS, talk to you at Guam 2 plus 47.

SPACECRAFT Okay, see you there.

CAPCOM Challenger, Houston back with you through Guam for about 7 minutes. Challenger, Houston.

SPACECRAFT Houston, Challenger, read you loud and clear, how me?

CAPCOM Loud and clear, a couple of things for you. Let you know that Hassan has confirmed a successful PAM spacecraft separation so it looks like it's on its way.

SPACECRAFT Outstanding, super.

CAPCOM INCO tried to turn on the tags, got a developer overtemp message and then attempted to turn it off and then on again as a way of correcting it but was apparently unable to turn it off and he'd like you to take a look at the tags and see if it is in fact still on and let us know what the situation is.

SPACECRAFT Jeff, it's still on and the overtemp light is on.

CAPCOM Thank you and finally on the VTR which you're going to play, is there a voice track on that?

SPACECRAFT Negative, Jeff, we didn't put a voice track on it.

CAPCOM Okay, people would like to know whether you're planning to narrate it?

SPACECRAFT Yes, we'll add some words to it.

CAPCOM Okay, that's good.

SPACECRAFT CDR.

CAPCOM Go ahead, Dick. Go ahead, Dick.

SPACECRAFT Roger, just after we had LOS of the last, your last pass at a time of about 2 plus 43, we saw and took a picture of two volcanos one which obviously is active and errupting now and we're almost positive that's site seven alpha. One looked like it didn't look like smoke was coming out of it, however it looked like it had a little white tip as if we couldn't tell if it was, what that was, however the other one obviously was, had a fairly sizable eruption. And, I'm sorry don't let me mislead you, it was on the west, western part, I'm sorry the eastern part of site 7 alpha.

CAPCOM You know we actually have a report on that, the, and you had some information on the teleprinter about that, the volcano, (garble) which is near site seven alpha and it is indeed erupting and I guess the eruption started around August 17th or so.

SPACECRAFT Roger, the smoke was very brownish coming out and the wind was carrying it, it looked to us like essentially due west.

CAPCOM And originally I guess we only had reports on one volcano and we are trying to run down with the Smithsonian to see if there are any reports of a second one in the vicinity.

SPACECRAFT Well we only saw one erupting, we did site, there is another volcano on the next island to the east that we could identify and all we could see was it had a white tip, it was white at the tip of it, I can't explain any more than that, we just couldn't see with the resolution of our eyes.

CAPCOM Oh, okay, so as far as the actual eruptions, then you're saying that you saw one.

SPACECRAFT That's correct.

CAPCOM Okay, fine thanks. Challenger, we're 30 seconds LOS, see you at Hawaii with TV at 3 plus 00, message from GNC, could you please take the startrackers to track.

SPACECRAFT We sure will.

END OF TAPE

SPACECRAFT We sure will.

PAO This is Mission Control, Houston at mission elapsed time 1 day, 2 hours, 59 minutes. Just a minute away from acquisition of signal through Hawaii and did have some expected downlink television of material recorded previously showing the INSAT deployment and some other scenes selected by the crew.

CAPCOM Challenger, Houston with you through Hawaii, 8 minutes.

SPACECRAFT Challenger, Houston, INCO says we're ready to receive TV whenever you want to send it down.

SPACECRAFT Okay, Houston, we're getting ready to put it on (garble). Okay, Houston, we are going to give you, try to give you 4 playbacks. One indicating showing the inside activation and spin up, the second one, just beginning of mechanical sequence, inside activation and sunshield openings. Second sequence should be the beginning of mechanical sequence and spin up. Third sequence should be the spin up and deployment and the fourth sequence we'll show you the OMS burn after the deploy.

CAPCOM Okay, we're looking forward to it.

SPACECRAFT Okay, here comes inside activation and sunshield opening.

CAPCOM We got a very small bit of a picture, here comes something again.

SPACECRAFT Okay, stand by, I guess I'll have to tell what this one is. This was the very end of the end defector checkout.

CAPCOM Yes, it looked a little bit strange there for me. A PAM point of view, there we go, that's the FDA and the sunshield again.

SPACECRAFT Yes, (garble) and we should see the sunshield opening here pretty quick right after (garble) activation.

SPACECRAFT Okay, you can see the sunshield opening here and here we have the sunshield fully open. And the spacecraft was not too visible there because we were in darkness and the payload bay lights shine up and of course the satellite beam inside the sunshield was kind of hidden. Okay, guys, stopping the tape ahead here for you. Okay this sequence on the tape session beginning on mechanical sequence and sunshield, I mean spacecraft spinup.

CAPCOM Okay, we're watching.

SPACECRAFT We just got our antenna message, Jeff.

CAPCOM We see it, we'll get to you.

SPACECRAFT You can see we have a smooth spin up, it spun all the way up to 40 rpm and stayed very stable right at 40 rpm.

SPACECRAFT Okay, the third sequence is going to show you the spin up and deploy here (garble).

CAPCOM Okay, we're going to be watching. Can you please put the TV system into the command mode and INCO thinks he can clean up the picture a little bit from our point of view.

SPACECRAFT (garble), he is going to back it up a bit for you. And while he is doing that Jeff, once we start tilting that camera up of course, we're deploying very close to the sun so you'll see the picture is not optimal.

CAPCOM Okay, we understand. And you said at this point when it was spinning, you felt no vibrations or anything at all?

SPACECRAFT No vibrations at all. We did get a large bump right there at deployment itself but you can see that the spacecraft deployed very smoothly. And there you can see the sun's reflection, the two sides that have the solar arrays on them do not reflect the sun as much as the two sides that have all the gold foil.

CAPCOM Yes, that interesting.

SPACECRAFT Bill Thornton was up here on the flight deck with 16 mm with our new seethrough zoom lens on it and we think he may have been able to zoom in close enough to keep alot of the sunshine out of the picture so we may have some good films to look at postflight.

CAPCOM Yes, that will be great and of course you won't get the blooming. From here, it looks like it came out real solid, no sign of any wobbling or anything. Is that your subjective opinion too?

SPACECRAFT That - as a matter of fact I watched for that and I could see no wobble whatsoever - -

END OF TAPE

SPACECRAFT Good films that we look at postflight.

CAPCOM Yes, that would be great and of course you won't get the blooming, from here it looks like you came out real solid, no sign of any wobbling or anything. Is that your subjective opinion too?

SPACECRAFT (Garble) as a matter of fact I watched for that, and could see no wobble ones whatsoever, and as I mentioned earlier right on time at a minute and 20 or a minute 25 whatever, we saw ANC start up.

CAPCOM Okay, we're 15 seconds LOS, why don't you hold off the next tape, we're going to configure Goldstone for TV and we'll be with you there at 3 plus 11 that will be about a 3 minute LOS, we're going LOS now.

SPACECRAFT Okay. And thank you very much Jeff.

CAPCOM Challenger, Houston's back with you through the states and hold off on the TV until we give you a go.

SPACECRAFT I understand Houston. Houston, CDR would you like to have these initiation times for the gas alpha?

CAPCOM Stand by Dick. Dick, yes we would like to get those initiation times at some point.

SPACECRAFT Okay, I can read them to you real quite right now if you have a pencil, I'm on page 4-2, I mean flight supplement 4-2 of the orbit ops.

CAPCOM I'm with you, read away.

SPACECRAFT Okay, the first time is 1 day 2 hours and 35 minutes, the relays 03 is 37 minutes, 06 is 37 minutes, 07 is 38 minutes and then the 07 hot back to latent is 39 minutes.

CAPCOM Okay, we have the times.

SPACECRAFT Okay

CAPCOM Okay, Challenger we're ready for TV and on A7 could you please put the TV to command because we have to clean up some of the asynchronous signal so we can get a cleaner signal down here.

SPACECRAFT Okay, your TV's in command and we're going to roll it for the Oms burn. (garble) can we roll this tape. Houston, Challenger.

CAPCOM Go, go ahead.

SPACECRAFT Can we go ahead and roll this.

CAPCOM Yes, please we're ready.

SPACECRAFT Here we go. This is camera delta, Jeff, and you'll note on this one that you can see the start of burn and just a flash and that will be about it, it's only a 10 second burn. (garble) side of the burn there, Jeff. You probably also saw a jump in the picture, that was the camera jumping when the OMS engines (garble) and we sure felt - -

CAPCOM You want to run that OMS burn by us again once more do you think, I'm not sure if a lot of people caught it.

SPACECRAFT Okay, we'll run it back again Jeff. It's somewhat underwhelming. Here we go again Jeff. You see that you saw the great big flash at the start of the burn and that's about it that we picked up on the VTR.

CAPCOM Yes, I think the audio reaction in the MOCR this time indicated a lot more people saw it so that was good, thanks a lot. I have something for you on that antenna message, it turns out there's a failed discrete on one of the antenna switch positions, I believe it's the lower right. The antenna is working but when SM sends that antenna a command it does not get a feedback and so although that antenna is in control the SM doesn't see it and it announces a miscompare and apparently we are going to get that everytime that antenna is called out and INCO's thinking about something to do to make sure you don't get a lot of messages especially during sleep period and we'll get back to you on that later.

SPACECRAFT Okay, Jeff, appreciate you saying that, we did get one antenna message last night, it turned out that Dan and I were up at the time so it was of no significance but if we could avoid that at night that would be a real help, thanks for telling us.

CAPCOM Yes, they are going to working on that and we'll just have to let you know what they come up with. Okay, Challenger, also got something for you on the water system on R12.

SPACECRAFT Okay, go ahead.

CAPCOM Tanks charlie and delta are now topped off so you can go ahead and reopen supply H2O tank bravo inlet valve.

SPACECRAFT Okay, it's open.

END OF TAPE

CAPCOM Tanks charlie and delta are now topped off so you can go ahead and reopen supply H2O tank bravo inlet valve.

SPACECRAFT Okay, it's open. And Jeff, and for CFES update, Dan and Bill are in the airlock doing the CTA prep on sample 3 alpha and I'm doing the prep on the sample 3 bravo and just for your info, it looks like the kidney cells are, I was able to get them stirred up into a very homogeneous solution. They were not very unhomogenous to start with but it looks real good and we'll be putting them in in a few seconds.

CAPCOM Sounds like things are going real well.

SPACECRAFT Maybe that word is not homogeneous, I don't know.

CAPCOM Well, if it's one solid mass, then it's probably homogeneous.

SPACECRAFT Okay, Jeff, we're starting the change out sample portion of sample 3 at time 1 day, 3 hours, 18 minutes.

CAPCOM We copy, Dale.

CAPCOM Challenger, we're LOS 30 seconds, talk to you through Ascension at 3 + 39.

SPACECRAFT Roger, Houston, and I'm going to be passing on a question from Bill Thornton about the micro-biological automatic timer for the PI, I think his name is Dwayne Pearson when we get to Ascension.

CAPCOM Okay, that was the micro-biological, what, Dick?

SPACECRAFT The micro-biological sampling DSO, a question about it's automatic timer. It does not appear to be working and Bill needs some instructions about the sample time.

CAPCOM Okay, we'll see if we can have some support for you.

SPACECRAFT Roger, he intends to do it manually. He thought it was for 8 minutes the timer had been set for 10 minutes. He would like for Dwayne Pearson to confirm the sample time.

CAPCOM All right, we'll see what we can find out.

SPACECRAFT Thanks a lot, Jeff.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, Houston with you through Ascension for 7 minutes.

STS-8 AIR/GROUND TRANSCRIPT t79j 243:09:48 8/31/83 PAGE 2

SPACECRAFT Roger Houston, read you loud and clear.

CAPCOM The E&D folks would like to get a test out of the Ku-band and they've got a very short procedure for you if you got a minute.

SPACECRAFT Roger, stand by, Houston.

SPACECRAFT Okay Houston, go ahead.

CAPCOM They would like to do a radar self-test and if you can on Panel A1 uniform put the Ku-band mode switch in a radar passive and then take the control switch to panel and command then INCO will do the rest of it for you.

SPACECRAFT Okay, Jeff. I did that to see if it took.

CAPCOM Thanks, Dick.

SPACECRAFT And Jeff, right at the tail end of that other pass, I was passing on a thing from Bill Thornton. He's been busy downstairs with Dan and Dale on that CFES sample preparation and asked me to pass on that request. Did you get all of it?

CAPCOM We did, we have somebody standing by who will hopefully be able to discuss it. We understood that Bill was going to come on line and talk about it a little bit.

SPACECRAFT Well, as I say he's downstairs busy in the midst of preparation and they just can't stop. But let me repeat what he asked me to pass on to you. He said that the automatic timer for the micro-biological sampling was not working. It ran for several minutes passed the time that it was set for and did not cut off, and did not cut off. He had understood that the sample time was 8 minutes, he may be mistaken but the timer had been set for 10 minutes. He told me he intends to manually do the sampling and request that a conformation as to the sample time, over.

CAPCOM Okay, I think we understand the question completely and I guess all I can tell you now is they're trying to raise - -

END OF TAPE

SPACECRAFT - - manually do the sampling and requested a confirmation as to the sample time, over.

CAPCOM Okay I think we understand the question completely and I guess all I can tell you now is they're trying to raise somebody that could answer the question for you, and right now we do not have an answer, I'm sorry.

SPACECRAFT Okay, no problem Jeff, I was just, we were so close to LOS I wasn't sure that you got it, but that's what he passed on to me and maybe later if there's any more questions I'm sure he'll be available to talk. Bill is been extremely busy both these two days and has not even been on COMM down there, working full time.

CAPCOM Having a good time, I hope?

SPACECRAFT Oh yes, he's having the time of his life.

CAPCOM Great, good to hear it. Challenger, LOS 30 seconds, talk to you at Botswana 3 + 50.

SPACECRAFT Okay, real soon we'll see you there.

CAPCOM Challenger, Houston with you through Botswana, 8 minutes. Challenger, Houston, how do you read?

SPACECRAFT Houston, Challenger, loud and clear, how me?

CAPCOM We read you Dick, I wasn't sure if we maybe just caught the tail end of a transmission you were making to us about being off the southwest tip of Africa. If I've got my geography right, I think that area's the (garble).

SPACECRAFT Roger that.

CAPCOM Oh that sounds neat.

SPACECRAFT I believe that was in the Hammer's (garble).

CAPCOM Probably McDonnell's then.

SPACECRAFT (Garble) the sep voltage.

CAPCOM Okay, we've got that Dale, thanks. Challenger, we're going LOS in about 30 seconds, we'll talk to you through Guam next at 4 hours, 22 minutes. I should say that the Orbit 2 Team is going to talk to you because Orbit 1 is going to go off now and probably go home and go to bed, it's 5:30 in the morning. It's been nice working with you.

SPACECRAFT Roger, enjoyed it, you (garble).

CAPCOM Okay.

SPACECRAFT Thanks alot.

CAPCOM Okay, be seeing you.

PAO This is Mission Control Houston. Loss of signal at Botswana, the crew doing a little sight seeing as they came across the southern tip of Africa. Apparently spotting the long rolls of dunes, also known as the Sands of Kilaharre, in Admibbia. Next station is Guam in 22 minutes, at 1 day, 4 hours, Mission Control Houston.

PAO Mission Control Houston, acquisition of Challenger upcoming in a few seconds through Guam Island on orbit number 20.

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM Challenger, Houston, Crystal Team with you through Guam for 7 1/2 minutes.

SPACECRAFT Roger that, how you all doing?

CAPCOM Doing fine Richard. When you guys have a minute I have an answer to the question you folks had on the medical DSO.

SPACECRAFT Okay, Bill is not on COMM, could you give it to me and let me pass it to him?

CAPCOM Roger. It appears that the 10 minute timer doesn't really bare a relation to the amount of each sample, each sample is suppose to have been worked on for two minutes per sample.

SPACECRAFT Okay, understand if Bill does it manually the sample should be 2 minutes per sample, is that Charlie?

CAPCOM That's a roger.

SPACECRAFT Okay, let me pass that on to Bill and if he's got any questions Fish, I'll get him on the hook and let him talk to you.

CAPCOM Okay. Challenger, Houston.

SPACECRAFT Hey Fish, a couple of words on CFES.

CAPCOM Okay, go ahead.

SPACECRAFT Okay, first of all the same situation that occurred yesterday was the sample pump staying in forward and not stopping half way through the correction is occurring today as you all predicted. We're pressing on as you suggested and just to keep

STS-8 AIR/GROUND TRANSCRIPT t80j 243:10:14 8/31/83 PAGE 3

you update with where I'm at, we are now 18 minutes to go in the
50 minute collect on sample 3.

END OF TAPE



SPACECRAFT ...occured yesterday with the sample props bending forward and not stopping halfway through the collection as is, occurring today as you all predicted, we're pressing on you suggested and just to keep you up to date with where I'm at, we're now 18 minutes to go in the 50 minutes collect on sample 3.

CAPCOM Roger, Dale, we copy. Also when you folks have a moment, we have some comm reconfiguration switches for you.

SPACECRAFT Okay, this is a good time Fish go ahead.

CAPCOM Roger, Richard when we left you last night, we configured over to STADAN coverage just before we put you to bed and we would like to undo that and put us back in the operational mode for, for our standard TDRS data transmissions, and we'd like you on that panel ALL, if you'd turn to the on orbit configuration, specifically the S-band PM mode rotary switch to TDRS data. The NSP data rate switches, both of them to low, and finally the two coding switches to on.

SPACECRAFT Okay, those switches have been set and do you need a payload in command or not?

CAPCOM Negative Richard, just, that switch configuration will do it for the time being.

SPACECRAFT Okay. And Houston, CDR be advised the TACAN NAV test has been started and I'll be doing that for the next several hours, if you see me out of sync, its an awful easy procedure to get out of sync on, so please let me know.

CAPCOM Roger, we'll do that Richard.

SPACECRAFT Okay, and Bill is busy right now in the middle of another med experiment and so I couldn't pass on that information to him but as soon as I can I will and he'll, and if there's any problem I'll get him to talk to you.

CAPCOM Roger, and we're about a minute and 30 seconds from LOS here and we'll see you next at Hawaii at 11, 9 plus 25.

CAPCOM Challenger, Houston, with you through Hawaii for 7 minutes.

SPACECRAFT Roger, Houston loud and clear.

CAPCOM Challenger, Houston, we'd like to confirm that for the tack end test you are on the upper antenna.

SPACECRAFT That's affirm Bill, I am on the upper antenna on all 3 TACANS, when I have time to, well it looks like now, I was going to say that I have not seen any of the TACANS blocked, I've

noticed now that all of them have the same azimuth readings but I have not been watching them too closely.

CAPCOM Roger, we copy. Challenger, Houston. We're 30 seconds LOS. We'll be picking up TDRS shortly afterwards.

SPACECRAFT Roger, Houston.

CAPCOM Challenger, Houston. With you through TDRS. Challenger, Houston, with you through TDRS. Challenger, Houston, through Goldstone UHF. How copy?

SPACECRAFT Houston, Challenger, that time we heard you first through transmit - loud and clear.

CAPCOM Roger, we're having trouble hearing you on TDRS, Richard, but we hear you now loud and clear.

SPACECRAFT Roger, roger. (Garble)

CAPCOM Roger. Challenger, Houston. Just a note for you. We have locked up on the Ku band for the first time.

SPACECRAFT Roger, good work.

CAPCOM And Challenger, Houston. We're with you through TDRS again. How copy?

SPACECRAFT Roger, loud and clear.

CAPCOM Okay, Richard. We've got you loud and clear too. Challenger, Houston. A note for Richard on the tacan test. We need you to go with the station 106.

SPACECRAFT Just in the process of doing that, Fish. Roger, thanks for the catch. I was - for some reason I did not hear the time tone when I had set it but it's we're in 106 now.

CAPCOM Roger.

SPACECRAFT Houston, Challenger.

END OF TAPE

SPACECRAFT Roger. Thanks for the catch. For some reason I did not hear the time tone when I had set it. But, we're in 106 now.

CAPCOM Roger.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT Okay, Fish. On the heat pipe experiment, the best I can tell, Guy is looking at the CAPS and planning on starting it at 5 + 15 and would you verify that he expects sunset at about 5 + 50, that's what it looks like in the CAP.

CAPCOM Stand by on that Dan. Just a note for you, as part of our TDRS testing there will be some periods coming up when we go in and out and have intermitant calm with you.

SPACECRAFT Okay.

CAPCOM Challenger, Houston. For Dan, it appears that sunset will be about 5:51, 5, 5, 1.

SPACECRAFT Roger, thanks.

CAPCOM Challenger, Houston, with you through Botswana for eight minutes.

SPACECRAFT Roger, Houston. Loud and clear. And Fish, we fired up the heat pipe on time at 1 day 5 hrs and 15 mins. and we're going in 12 mins of the run now and we have the evaporator the second tape is up to blue, tape number 2 and the condensor, tape number 1 is just about all blue. It starts changing color on the left end and progresses down towards the right. It changes pretty much all the same time, but it becomes a little more obvious on the left end first.

CAPCOM Roger, Dan, and we expect you to keep a close eye on those colors.

SPACECRAFT We're doing it by committee.

CAPCOM Roger that.

SPACECRAFT And the committee has three, so there's always a tie breaker. And Houston, MSI change out sample for sample number 4 occurred at 1 day 5 hr 4 mins.

CAPCOM Roger, we copy Dale.

STS-8 AIR/GROUND TRANSCRIPT t82j GMT 243:11:25 8/31/83 PAGE 2

SPACECRAFT And Fish, as far as the CTA prep stuff went, Bill and Dan finished up each of those right on time , and both of those samples are now in the storage module.

CAPCOM Roger, Dale, that sounds good.

SPACECRAFT And Fish, on the heat pipe, on the condensor the vertical tapes, tape 1 also turned blue and there's very little gradient with them, so it's pretty much and even temperature distribution over the whole condensor.

CAPCOM Roger, Dan, we're looking forward to seeing those pictures.

CAPCOM Challenger, Houston, we're 40 seconds LOS. We'll see you at Indian Ocean at 5 + 36.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t83j 243:12:01 8/31/83 PAGE 1

CAPCOM Challenger, Houston. We're 40 seconds LOS. We'll see you at Indian Ocean at 5 plus 36.

CAPCOM Challenger, Houston. With you through Indian Ocean UHF. How copy?

SPACECRAFT Roger, Houston. Reading you loud and clear.

CAPCOM Roger, Dan. We've got you loud and clear for about another 4 minutes.

SPACECRAFT Okay.

SPACECRAFT And Fish, on the heat pipe it looks like it's pretty well stabilized out now with the third - one evaporator blue - getting ready to turn and looks like it's about on a borderline between the third and the fourth tapes. And on the condensor the second tape is very blue and the third one's getting ready to come around and start turning to a kind of brown. It's been that way for quite awhile now. Just for your info, about the first 10 or 11 minutes we put comments on ICOM recorder and since then we've just been letting the cameras (garble).

CAPCOM Roger, Dan. We copy.

SPACECRAFT And Fish, separation voltage on sample number 4 is 2 5 6.

CAPCOM Roger, we copy - 2 5 6 sep voltage.

SPACECRAFT Roger, that.

CAPCOM Challenger, Houston. We're 30 seconds LOS. We'll see you at Guam at 5 plus 59.

SPACECRAFT Roger, Houston. See you there.

PAO Mission Control, Houston. Loss of signal at Indian Ocean Station. Guam will acquire Challenger in approximately 17 minutes. Earlier in this 20th orbit the first mockup with K-band - Ku-band on the TDRS through Challenger and the White Sands tracking station was accomplished. The first of many such tests that will be run over the next 3 or 4 days to bring out the TDRS tracking satellite in its various modes. At 1 day, 5 hours, 42 minutes Mission Control, Houston.

CAPCOM Challenger, Houston with you through Guam for 6 minutes.

SPACECRAFT Roger, Houston and like to talk to you about APU hydraulics.

CAPCOM Roger, go ahead.

SPACECRAFT Okay, we got a spec 86 message at a time of 1 day, 5 hours and 47 minutes and 11 seconds. When I called up spec 86 hydraulics accumulator - hydraulic accumulator pressure on system 1 was dropping very rapidly and was - I don't know exactly the number - but it was if I recall 17 hundred and something and thinking that I remembered that the limit was higher than that I went ahead and turned on hydraulic circ pump number 1 and then went to the pocket checklist and sure enough it said don't let it get below 1930 psi I think. We then went to the MAL. I guess the circ pump stayed on probably a minute or so while I was getting out the MAL and it said to turn it off in - on page 113 of the MAL block 2. I did turn it off and at that point Dan and I saw that the accumulator pressure now is holding steady at about 22 80. Coming out of there there's no particular, there's no exact answer for this because the accumulator pressure never increased above 2500 psi. So right now the system is stable. We, it did - the pressure was decreasing very rapidly and I'm afraid I can't add anymore light to it than that.

CAPCOM Roger, Richard. We'll take a look at that and get back to you.

SPACECRAFT Okay, and if you were recording data and want to go back and look at it the time again was 1 day, 5 hours, 47 minutes and 11 seconds when we got the...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t84j 243:12:33 8/31/83 PAGE 1

CAPCOM Roger, Richard. We'll take a look at that and we'll get back to you.

SPACECRAFT Okay, and if - if you're recording data and want to go back and look at it the time again was 1 day 5 hours 47 minutes and 11 seconds when we got the alert. I don't know how much before that it started down.

CAPCOM Roger.

SPACECRAFT And Houston, CDR.

CAPCOM Houston, go ahead Richard.

SPACECRAFT I - it's been now - - the circ pump has been turned off now for several minutes. Right after we turned it off the pressure was 2288 and it's dropped a couple of PCM counts since then.

CAPCOM Roger, we copy that and we're looking at it right now.

SPACECRAFT Okiedoke.

CAPCOM Challenger, Houston. We're 30 seconds LOS. We'll see you at Hawaii in 7 minutes.

SPACECRAFT Roger, Houston, we'll see you then.

PAO Mission Control Houston. Loss of signal at Guam. 7 minutes across the Pacific to Hawaii. Reacquisition on orbit 21. Dick Truly commenting on some hydraulic circulation pump activities aboard the spacecraft where the pressure in the circ pump 1 had dropped below specs. He had it on for awhile and got the pressure up holding steady at 2280 psi. Slightly over 6 minutes now until reacquisition through Hawaii and pass handing over to the tracking data relay satellite. This is Mission Control at 1 day, 6 hours 6 minutes. Mission Control Houston. Challenger now acquired by Hawaii tracking station.

SPACECRAFT Roger, Houston. About a minute ago, a minute and a half ago, the hydraulic accumulator pressure on number 1 dropped again. I caught - we caught it this time at 1920 psi and lost the circ pump while I was waiting for you.

CAPCOM Roger, Richard. Did you notice anything about the reservoir pressure?

SPACECRAFT Standby. And Houston, I'm not sure where to find reservoir pressure of spec 87 and 86. Neither spec 87 or 86 have it. The (garble) cue which was as long as we watched it, it looked about like it was when you - when we were AOS. That is,

STS-8 AIR/GROUND TRANSCRIPT t84j 243:12:33 8/31/83 PAGE 2

it was very slowly if at all decreasing and all of a sudden, apparently, the bottom just dropped out.

CAPCOM Roger, we copy that. I misspoke. I meant reservoir quantity Richard, but it just helps us in the malf book here if you noticed that.

SPACECRAFT Okay, the reservoir quantity has been steady about 65% the whole time.

CAPCOM Roger, Richard, we copy. And we'd like you now to turn the circ pump number 1 off.

SPACECRAFT Okay, it's off now.

CAPCOM And Challenger, Houston. We'd like you to take tacan number 3 to channel 73.

SPACECRAFT Roger, thank you. Thanks for the catch. Guy Gardner did it that time while we were busy and I misread it.

CAPCOM Roger, we'll make a note of that.

SPACECRAFT I should stay away from those pilot switches.

CAPCOM Challenger, Houston.

SPACECRAFT Roger, Houston. Go ahead.

CAPCOM Roger, Richard. We'll keep an eye on this and if we see a need for you to turn the circ pump back on we'll tell you but if you get an FDA related to the decreasing pressure we would like for you to go ahead and turn the circ pump 1 ...

END OF TAPE

CAPCOM Challenger, Houston.

SPACECRAFT Roger, Houston, go ahead.

CAPCOM Roger, Richard. We'll keep an eye on this and if we see a need for you to turn the circ pump back on, we'll tell you but if you get an FDA related to the decreasing pressure, we would like to you to go ahead and turn circ pump 1 back on.

SPACECRAFT Okay, I promise I'll do it. The only thing that concerns me about it, Fish, is that both times - by the time we got the tone the pressure had already plummeted and if - if four of us had been down below or didn't hear it or something, I'm not - I have no idea how low it would go.

CAPCOM Roger, we copy that, Richard. We're 45 seconds LOS and we hope to have a TDRSS handover shortly afterwards.

SPACECRAFT Okey Doke, but we'll keep a close eye.

CAPCOM Roger.

PAO Mission Control Houston, handover in progress from the Hawaii ground station S-band to S-band on the TDRSS satellite. However, even prior to Hawaii LOS we had a good solid lockup on Ku band television which is continuing at this time, from payload bay cameras aboard Challenger.

CAPCOM Challenger, Houston. With you through TDRSS. Challenger, Houston, just a note for you. On the ground here we're getting TVV at the Ku band and really getting a superb quality picture. Challenger, Houston. How copy?

SPACECRAFT Loud and clear.

CAPCOM Roger, Dan. Did you folks receive teleprinter message number 10?

SPACECRAFT Dale checked that out earlier today and they said they didn't send it up.

CAPCOM There was just some (garble) you might want to check now.

SPACECRAFT Okay. Dale is on his way.

CAPCOM Also, Dan, while we're waiting for that, just to let you know we're receiving TVV of the Ku band down here and getting an excellent picture.

SPACECRAFT Super! And Houston, CDR. Affirmative, we do have a message 10.

CAPCOM Roger, Richard. Then just a note on that. We'll have to get back with you on a real MET for that. It may be as early as a rev earlier but there may be some modifications at that time.

SPACECRAFT Rog, I understand.

CAPCOM Challenger, Houston. We may have to move the alignment scheduled for that time a rev earlier but not moving on message 10 on that rev earlier.

SPACECRAFT Roger. Understand.

CAPCOM Challenger, Houston.

SPACECRAFT Dan.

CAPCOM Roger, Dan. We're watching the accumulator pressure decrease here and we're trying to come up with a time remote for you to cycle the pump to keep the pressure up. Also can you give us a little status on the heat pipe?

SPACECRAFT Yeah, I sure can. Just before we went into darkness the setting Sun over the longeron hit it from behind and kind of - well you're going to have to look at the picture it would take me a week to explain it, but different areas went different colors and it just kind of one diversion I guess. And it kind of held that way. It was pretty hard to see it with just the bulkhead light but it appeared to kind of hold that state through the dark pass, but we came up light, the sun hit it on the face and now it looks just like you expect it to look. The center of number 3 tape, on both the evaporator and condenser are blue and everything else is black and - -

CAPCOM Roger, Dan, we copy black and white.

SPACECRAFT That's right.

CAPCOM Challenger, Houston. With you through Botswana for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear. How me?

CAPCOM You're loud and clear, Richard. Roger, that's good news.

SPACECRAFT Houston, MS 1.

CAPCOM Go ahead MS 1.

SPACECRAFT Okay, Fish, the changeout sample time for sample number 5 is 1 day 6 hours 52 minutes.

STS-8 AIR/GROUND TRANSCRIPT t85j 243:12:49 8/31/83 PAGE 3

CAPCOM Roger, 1 day 6 hours 52 minutes, Dale.

SPACECRAFT (Garble)

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t86j 243:13:35 8/31/83 PAGE 1

CAPCOM Go ahead MS 1.

SPACECRAFT Okay, Fish. The changeout sample time for sample number 5 is 1 day 6 hours 52 minutes.

CAPCOM Roger, 1 day 6 hours 52 minutes, Dale.

SPACECRAFT (Garble).

CAPCOM And Challenger, Houston. We'd like you to give us a spec 86 accumulator 1 pressure please.

SPACECRAFT Standby. Okay spec 86 accumulator 1 pressure is 2368.

CAPCOM Roger, Dan, 2368.

SPACECRAFT And Fish, we've tidied up down here in the middeck and the camera is - the TV camera is mounted and we're all set for that.

CAPCOM Roger, Dale, I understand. Challenger, Houston for Dan.

SPACECRAFT Go ahead.

CAPCOM Roger, Dan. The heat pipe is at a peak in its cycle right now and we'd like for you to tell us if when you look out there if you see anything other than black on the heat pipe.

SPACECRAFT Roger. The center number 3 is blue on the evaporator, number 3 is blue on the condensor, and 4 and 5 on the condensor have a couple of other extraneous colors on them. There's a couple patches that have a little blue and green.

CAPCOM Roger, Dan. Have you had a chance to get a vote on that?

SPACECRAFT Yeah, the vote is coming up right here. Number 2 agrees.

CAPCOM Roger, number 2.

SPACECRAFT I say magenta. And Fish, I clicked off with frame number 7 so you should have a picture of what we were just telling you about.

CAPCOM Roger, Dan. We copy frame number 7 will show this peak in the cycle.

SPACECRAFT Fish, it looks like the right end of the condensor is where we have the extraneous colors and also the vertical

bars, there only number 2 is blue on the right end where the other vertical bars number 3 is blue.

CAPCOM Okay, Dan we copy that. Thank you.

SPACECRAFT We're going to set it up again for the upcoming night cycle, and like I say, we got 7 frames left.

CAPCOM Roger, Dan. We concur. Challenger, Houston. We're about 30 seconds from a short LOS. We'll see you in about a minute and a half at Indian Ocean.

SPACECRAFT See you there.

CAPCOM Challenger, Houston. With you through Indian Ocean for 9 minutes.

SPACECRAFT Roger, understand.

CAPCOM This is Houston, go ahead. Challenger Houston. Go ahead.

SPACECRAFT Roger, just an update. We activated the PRM at 1 day 07 hours and 10 minutes.

CAPCOM Roger, we copy, 1 day 07 hours 10 minutes. Challenger Houston. We're 45 seconds LOS. Just like to confirm with you that you received message 12.

SPA CRAFT Got your message. 12 is a weather message.

CAPCOM Roger, Richard. We'll see you at Guam in 7 plus 37.

SPACECRAFT Roger, understand. Guam at 7 plus 30. See you there.

CAPCOM 7 plus 37, Richard.

PAO Mission Control Houston. Loss of signal through the Indian Ocean station. Guam in 17 minutes. The systems people here in mission control are still trying to sort out what causes the accumulator pressure in the hydraulic systems 1 to suddenly drop down below the red line limits. At one time Truly reported that the pressure was down to 1700 psi roughly. He turned the pump back on and the systems engineers here are trying to figure out a timeline by which the crew could cycle the circ pump at some interval to keep the pressure up to the nominal 2300 or somewhat ...

END OF TAPE

PAO ...pump back on and the systems engineers here are trying to figure out a timeline by which the crew could cycle the circ pump at some interval to keep the pressure up to the nominal 2300 or somewhere in that range psi. However, as mentioned earlier by different flight directors in their briefings, that particular system is not critical to the mission. In fact the first daily report from the mission says analysis of this problem is underway but present indications are that hydraulic circ pump number 2 will not be required for the remainder of the mission. Still it's one of the things that systems engineers like to understand. The best way to understand it is to play with it a little. Guam in 16 minutes followed by Hawaii. A handover to S-band and some fairly sharp television from the payload bay camera through the TDRS Ku-band link on this most recent orbit. At day 1, 7 hours, 22 minutes Mission Control, Houston.

PAO Mission Control, Houston. Acquisition at Guam.

CAPCOM Challenger, Houston with you through Guam for 3 minutes. We'll have a short keyhole about a minute into the pass.

SPACECRAFT Roger, Houston. Any word from schedule?

CAPCOM Negative Richard. We'll probably have it for you at Hawaii.

SPACECRAFT Okay.

SPACECRAFT And Houston, CDR.

CAPCOM Houston, go ahead Richard.

SPACECRAFT Roger, we had a little more excitement during this last AOS and time of - at a time of about 7 25 we got a fire Klaxon and there were sirens and hustled up and had a aft bay 1, a single aft bay 1 light. When we looked at system summary 1 it turned out that a sensor bravo aft bay 1 was very high and when Dan saw it, it was decreasing rapidly. We reset the sensor, did a circuit test. The sensor did not appear to fail during the circuit test. However, then it's indicating 0.6 and it says that is should be 0.5 or less. Looks like a aft bay 1 bravo sensor failure but it's still in the system. Sensors 2 and 3 read .2.

CAPCOM Roger, we copy that Richard and we'll get back with you.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead Richard.

SPACECRAFT What time is AOS Hawaii?

STS-8 AIR/GROUND TRANSCRIPT t87j 243:13:52 8/31/83 PAGE 2

CAPCOM Roger. AOS Hawaii will be at 7 plus 48.

SPACECRAFT Roger.

CAPCOM And Challenger, Houston. We need you to go to Channel 35 on the TACAN channels - all 3 of them.

CAPCOM And Challenger, Houston. We're 30 seconds LOS. We'll see you at Hawaii in 8 minutes.

SPACECRAFT Roger, Houston. And if there's a chance of TV at Hawaii I'm going to terminate the TACAN test.

CAPCOM Richard, there'll be no TV at this Hawaii pass, so you can go ahead and press.

SPACECRAFT Thank you.

PAO Mission Control, Houston. LOS at Guam. Reacquisition at Hawaii in 6 and a half minutes. Flight crew namely Dick Truly reported they had an indication of a heat sensor or fire detection sensor in aft bay and investigating it they found that sensor number 1 seemed to be high while the other 2 redundant sensors had the normal readings. They reset and did a circuitry test and that's a puzzlement to both the crew and the people here on the ground why that should happen and the supposition is that that particular sensor's failed in the high mode...

END OF TAPE

PAO ... while the other two redundant sensors were at the normal readings. They reset the circuitry test and it's a puzzlement to both the crew and the people here on the ground why that should happen and supposition is that that particular sensor is failed in the HI mode. However, further studies of this glitch, hopefully will shake out reasons for that indication onboard. Challenger now in the early quadrant of orbit number 22. We'll have - hand over again to TDRSS s-band after Hawaii, LOS. And we'll be back in 5 minutes at Hawaii at day 1 7 minutes 43 seconds, Mission Control Houston. Mission Control Houston, acquisition in about 30 seconds or less through Hawaii.

CAPCOM Challenger, Houston, through Hawaii for 8 minutes.

SPACECRAFT Roger, Houston, loud and clear. How us?

CAPCOM We got you loud and clear, Richard. Challenger, Houston.

SPACECRAFT Roger, go ahead.

CAPCOM Richard, we have a means of suppressing the antenna fault message. We can do it or you can do it. It's a 3 step procedure if you would like to do it onboard.

SPACECRAFT Okay, either way. Why don't you let me do it and then that way i'll understand it better.

CAPCOM Roger, you do a spec 60 pro, followed by an item 1+0921049 execute; followed by an item 10 execute.

SPACECRAFT Okay, spec 60 in parameter 921049 and i'm assuming item 10 is an inhibit. Is that right?

CAPCOM That's correct, Richard.

SPACECRAFT Okey Doke. We'll do that and when I finish changing this tacan channel, I'll give you a status on what we've done on the tacans.

CAPCOM Roger.

SPACECRAFT Okay, Houston. Since the start of the tacan test, I think we essentially got each one very close to the time with the exception of the one at 7 hours 24 minutes. That was a Thailand pass and I think then we missed the one that you caught which was at 7 hours I think, and 34 minutes and 20 seconds I believe it was. There was one in there that we missed because of the - in between the hydraulics and the fire alarms and whatever. Other than that I think each of them had been done close enough to to have us over the stations at the time in the proper channels.

STS-8 AIR/GROUND TRANSCRIPT t88j 243:14:14 8/31/83 Page 2

CAPCOM Roger, we copy that Richard. Sounds real good.

SPACECRAFT And Fish, we have message 14 onboard.

CAPCOM Roger, Dale, message 14. Challenger, Houston, we're 1 minute LOS. We'll be without TDRSS this pass so we'll see you next at Santiago at 8 + 16.

SPACECRAFT Roger, 8 + 16, Fish. And we'll see you there.

CAPCOM Roger.

PAO Mission Control Houston. Loss of signal at Hawaii. We had hoped to have another lockup with the s-band side of the TDRSS satellite however, it appears that the prime ground computer at White Sands has gone belly up momentarily. So while thats being sorted out we have an LOS here between Hawaii and Santiago lasting 19 minutes at day 1 7 hours 30 - 57 minutes, Mission Control Houston.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t89j 243:14:29 8/31/83 PAGE 1

PAO at day 1, 7 hrs 30. 57 minutes Mission Control, Houston.

CAPCOM Challenger, Houston's with you at Santiago for 5 minutes.

SPACECRAFT Roger Houston. How you doing John?

CAPCOM Real good, Richard. Look's like ya'll been having a great day today.

SPACECRAFT Well, it's been kind of busy. We sure enjoyed the sight of that INSAT getting off successfully.

CAPCOM Roger, that. Really looked good Richard.

SPACECRAFT I completed the TACAN test after LOS and I think I completed enough procedures so you can check the configuration if you like.

CAPCOM Roger, understand, and we'll check it, Richard. Looks good.

SPACECRAFT And, Houston, Challenger, after 1 day 8 hrs and 5 mins, the incubator is complete.

CAPCOM Roger, understand Dan, good show.

SPACECRAFT And, Houston, also the heat pipe was terminated at 1 day 7 hr and 45 mins. So we got 2 hrs and 30 mins, including 2 night passes on it.

CAPCOM Roger, Dan. That's really great news to Payload folks.

CAPCOM And Challenger, Houston. When you have a moment, I have a flight note for you.

SPACECRAFT Roger, go ahead.

CAPCOM Roger, Richard. Because of tonight's tail Sun attitude, we would like to leave the freon flow prop valves and the payload heat exchange to aid in the cabin temperature control. Therefore, this evening when you get to the CFES closure, we would like you to delete the FES deactivation.

SPACECRAFT Okay, understand. Delete the FES deactivation after the CFES is complete tonight, but I, did you say something about the cabin manual control, I didn't hear that.

CAPCOM Negative, just, no that's why we're doing it Richard. Because we're going to the tail Sun, we'd like to leave the freon flow prop valves and payload heat exchanger which they are in.

SPACECRAFT Roger, understand. We'll delete the FES deactivation after the CFES is complete.

CAPCOM Roger that. Good read back.

CAPCOM Challenger, Houston. We're going to be going LOS, Santiago. See you at Botswana at 8 + 38.

CAPCOM Challenger, Houston's with you at Botswana for 1 minute.

SPACECRAFT Roger, Houston. The IMU align is complete and I'll give you the data when we have a longer pass. And the way I read your message, you'd like me to remain in IMU align attitude until we go to the tail Sun attitude. Is that correct rather than going back to PLB.

CAPCOM Stay in this attitude through the conference Richard. That's correct.

SPACECRAFT Roger, understand.

CAPCOM And Challenger, we're going to be going LOS here in 30 seconds. We'll see you at Indian Ocean at 8 + 46.

SPACECRAFT Okay, John. We'll see you at Indian Ocean station.

SPACECRAFT John, before you go over the hill, change out sample on sample 6 began at 1 day 8 hr 36 mins.

CAPCOM Roger, copy.

CAPCOM Challenger, Houston's with you at IOS for 8 minutes.

SPACECRAFT Roger, Houston. Read you loud and clear.

SPACECRAFT Houston, CDR.

CAPCOM Roger, go ahead.

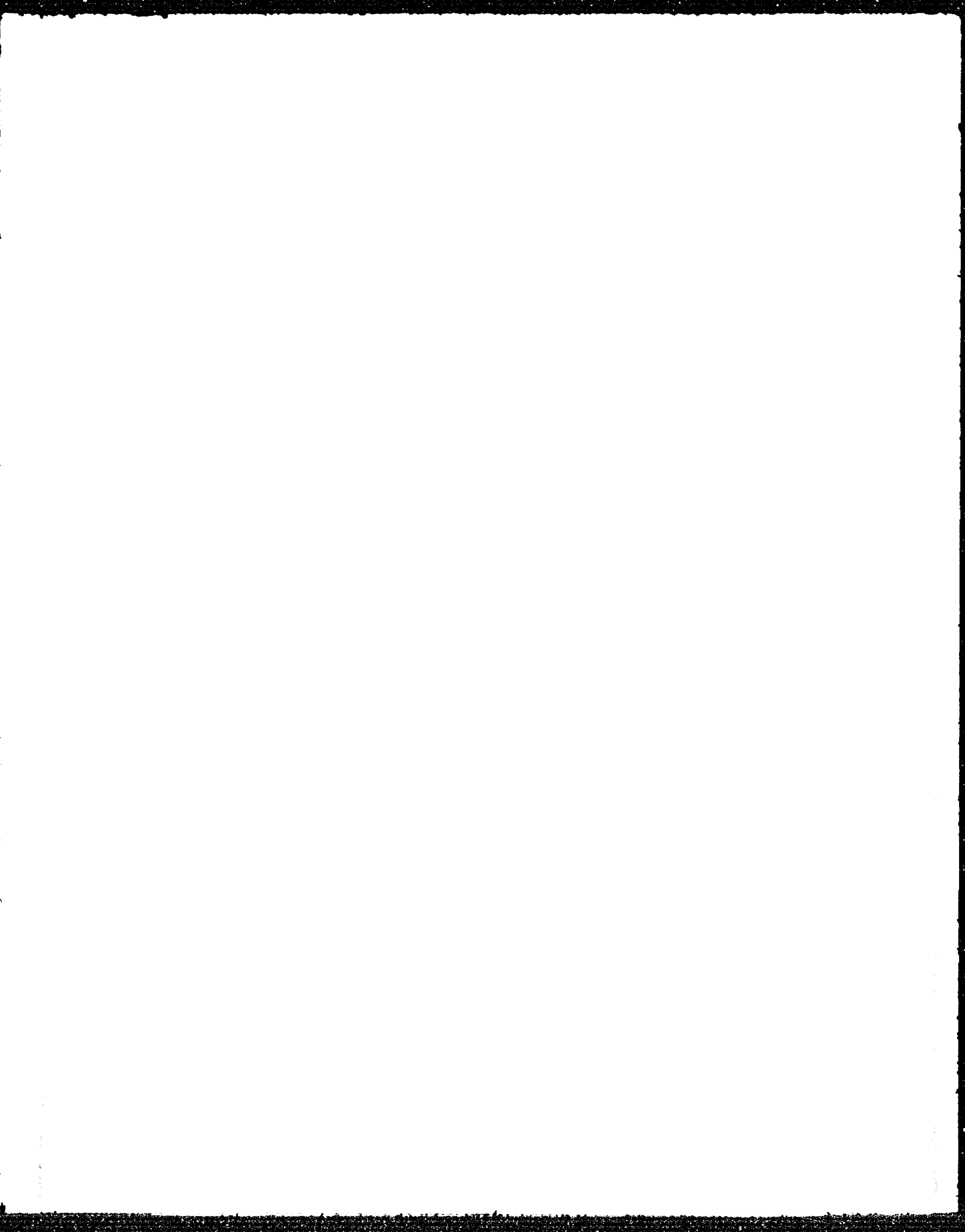
SPACECRAFT John, I wonder if I could pass on a minor schedule change request for tomorrow morning's flight plan for you to consider.

CAPCOM Yes sir, ready to copy.

STS-8 AIR/GROUND TRANSCRIPT t89j 243:14:29 8/31/83 PAGE 3

SPACECRAFT Roger, we were originally settled, set up to do the TV 04 which is a demonstration of some of Bill's things. And we had hoped, what we hoped to do was to demonstrate some of the more more visible things that Bill's been doing, but unfortunately it required some onorbit preparation and some of them, he's been so busy in the last couple of days, that he himself has not even tried out. And I was wondering if I could request that we delay a day or 2 on that particular TV, if you'd like to go ahead and schedule us to set up a cabin TV, any way you'd like it, and show some internal TV, that's certainly ok, but if we could delay that particular one till a later day, I'd appreciate it.

END OF TAPE



SPACECRAFT ...he's been so busy in the last couple of days that he himself has not even tried out. But I was wondering if I could request that we delay a day or 2 in that particular TV. If you'd like to go ahead and schedule us to set up the cabin TV anyway you like it and show some internal TV that's certainly okay but if we could delay that particular one to a later day I'd appreciate it.

CAPCOM Roger, Richard. We will work that.

SPACECRAFT Okay, thanks a million. Appreciate it.

CAPCOM Yes sir.

CAPCOM Challenger, Houston. When you're ready I'll just give you a brief summary of where we think we are with the hydraulic system 1 problem you had earlier.

SPACECRAFT Okay, Houston just a second. Let me grab a piece of paper and I'll be ready.

CAPCOM Okay, standing by.

SPACECRAFT Okay, Houston. Go ahead.

CAPCOM Roger, Dan. What we think it is likely is an unloader valve or a check valve leak - it's an internal leak so not losing any fluid. We think the pressure has definitely stayed stable for the past rev and as a result at the current time there's no need to run the circ pump anymore. We'd like to have you put circ pump 1 back to GPC and we'll continue to watch it for you.

SPACECRAFT Okay, circ pump number 1's in GPC.

CAPCOM Roger, that. We're about a minute to LOS right now. We'd like you to put your star tracker back to the track mode please.

SPACECRAFT Roger, in work.

CAPCOM Roger, that.

CAPCOM And Challenger, Houston. We're going LOS here in 30 seconds. Just for your information, the conference will start at AOS Hawaii which is 9 plus 25 and that pass will last for 4 and a half minutes. We will see you at Guam at 9 plus 14.

SPACECRAFT Roger, Houston we copy that. Thank you.

CAPCOM See you later Dan.

STS-8 AIR/GROUND TRANSCRIPT t90j 243:15:21 8/31/83 PAGE 2

Hello, Ranch. This is Houston COMTECH on the active COMTECH loop.

Hello, Ranch. This is a Houston active COMTECH on the real air-to-ground loops. How copy?

Ranch, this is Houston.

Houston, this is Ranch.

Want you to make a voice check with my COMTECH please.

With who sir?

With COMTECH.

Okay.

COMTECH call Ranch.

Hello Ranch. This is Houston COMTECH on the active air-to-ground loop, how copy?

COMTECH this is Ranch. I copy loud and clear. How do you copy Ranch.

I read you loud and clear.

Roger.

Thank you Ranch.

Houston, Ranch.

Houston.

Roger, I just changed the patch board here. I was just wondering if you still hear me okay.

Say that again.

I said I just changed a patch board here. I was wondering if you still heard me okay.

You're okay.

Okay, thank you.

PAO This is Mission Control, Houston. A little over a minute now until acquisition of Challenger through the Guam station. At the following pass at Hawaii the flight crew aboard

STS-8 AIR/GROUND TRANSCRIPT t90j 243:15:21 8/31/83 PAGE 3

Challenger will be talking with President Ronald Reagan from the ranch in Santa Barbara. This Hawaii pass will be roughly 4 and a half minutes with a slight break in the middle for what's called a keyhole. Earlier in this orbit the CAPCOM passed to the crew the supposition that the hydraulic system number 1 problem was likely in an unloader valve or some other internal valve in that hydraulic system because the valve apparently has reseated with the turning on the pumps and has been pressured then stable for one entire orbit. So they're just going to watch it for awhile.

END OF TAPE



PAO ...unloader valve or someother internal valve in that hydraulic system because the valve apparently is reseated with the turning on the pumps and has been - the pressure has been stable for one entire orbit. So they're just going to watch it for awhile.

SPACECRAFT Challenger, Houston.

CAPCOM Roger, Challenger, Houston.

SPACECRAFT Roger, we're in the - we've just inserted the collector for sample 6 and the flow 7 reading is 252 volts.

CAPCOM Roger, copy that Guy. Thanks a lot.

CAPCOM And Challenger, Houston. We have a new state vector onboard.

SPACECRAFT Roger, John. I was watching the uplink and figured that's what you all were doing. Thank you very much. Appreciate it.

CAPCOM Yes, sir.

CAPCOM And Challenger, Houston. We're going to be going LOS in 45 seconds. And Guy if you could send us the sep voltage for sample 6 please.

SPACECRAFT The sep's what I had read out to you and that was 252 volts.

CAPCOM Roger, I'm sorry Guy. I meant sample 5.

SPACECRAFT Roger, for sample 5 it's 255 volts.

CAPCOM Roger, copy. Thank you. We're going LOS in 30 seconds. We will see you at Hawaii at 9 plus 25.

SPACECRAFT Roger, Houston. See you at 9 plus 25.

PAO Mission Control, Houston. Loss of signal at Guam. 7 minutes away from reacquisition at Hawaii through which the flight crew will have a brief conversation of some 4 minutes with President Reagan accompanied by live TV from the spacecraft. Challenger now early in the 23rd orbit of this flight. Guy Bluford reported over Guam that he had completed the continuous flow electrophoresis system sample number 6 as per the timeline. At 1 day, 9 hours, 18 minutes mission elapsed time this is Mission Control, Houston.

Hawaii COMTECH, Houston COMTECH air/ground 1.

Hawaii COMTECH, Houston COMTECH air/ground 1. How
copy?

Hawaii COMTECH copies you loud and clear.

Roger, standby for a California Ranch.

Roger.

Ranch, Houston.

Houston, Ranch.

Call Hawaii COMTECH please.

Roger, Hawaii COMTECH, Ranch.

Hawaii COMTECH copies you loud and clear.

Hawaii COMTECH this is Ranch. I have you loud and
clear.

Okay, Hawaii COMTECH. Remain in this configuration
for your upcoming pass.

Roger.

END OF TAPE

Houston, Ranch.

CAPCOM Challenger, Houston's with you at Hawaii. The President is on the line.

SPACECRAFT Roger, Houston.

Ranch, Houston. We're ready to proceed.

RANCH Houston, Ranch. Roger, you ready for the President.

Affirmative.

RANCH Standby.

RANCH This is the Ranch. The President is on the line.

PRESIDENT REAGAN Commander Truly.

SPACECRAFT Yes sir, Mr. President.

PRESIDENT REAGAN Well, you know I can't help but ask since I'm sitting in California just about where in the world are you now?

SPACECRAFT We're over Hawaii sir.

PRESIDENT REAGAN Over Hawaii and coming this way.

SPACECRAFT (Garble). Yes sir coming your way at about 160 miles up.

PRESIDENT REAGAN In about 20 minutes you should be here. Well listen, congratulations on a successful and spectacular night launch. Everyone of these launches of the shuttle is a spectacular and a noteworthy event but this one has certainly its share of firsts. I know it was touch and go with the weather but you were launched right on schedule and I think about 250 million Americans breathed a great sigh of relief. But you've got a lot of firsts there. Guy congratulations. You I think are paving the way for many others and you are making it plain that we are in an era of brotherhood here in our land and you will serve as role model for so many others and be so inspirational. I can't help but express my gratitude to you. And Bill at 54 is the oldest astronaut to ever fly in space. You have an especially warm place in my heart. Makes me think that maybe someday I might be able to go along. I know this has been a busy day with the successful deployment early this morning of the Indian National Satellite which I understand will bring a broad range of communication and weather resources to the people of India and serves as a good example of international cooperation in space but on behalf of all our people I want to thank you all for your

courage, your commitment to space research. You've set a fine example for all our young people who represent our hope for the future. Now I know that this call came - I caught you on your way to your bunks for some well deserved sleep so I better cut this short and I just wanted to let you know that we're all looking forward to another successful mission and to your safe landing here in California on Labor Day. God Bless all of you.

SPACECRAFT Mr. President. Thank you so much. We appreciate your taking the time to call us and we're very pleased and proud to be here and thank you for calling very much.

PRESIDENT REAGAN Well, it's my pleasure and I know I'm speaking in behalf of all your fellow countrymen when I say good flying and a happy landing on Labor Day here in the USA. Again God bless you. Carry on.

SPACECRAFT Thank you Mr. President.

CAPCOM Challenger, Houston. We're going to try to pick you up with TDRS. If we lose you we'll see you at Santiago at 9 plus 52.

SPACECRAFT Roger, John. Thanks alot.

CAPCOM Challenger, Houston. You guys really are neat housekeepers.

SPACECRAFT Laughter. I put it back the way it was.

CAPCOM We saw you standing on it all.

SPACECRAFT John, are you still going to try TV Ku's?

PAO Mission Control, Houston. Getting intermittent Ku-band television from Challenger after Hawaii ground station LOS. However, we're unable to get uplink by S-band to the spacecraft to do any commanding or voice comm at this time so it may be another 2 or 3 ground stations before we do have continuous...

END OF TAPE

PAO ...to the spacecraft to do any commanding or voice comm at this time so it may be another 2 or 3 ground stations before we do have any continuous comm with the spacecraft. Next ground station is Santiago in 15 minutes. At 1 day, 9 hours, 36 minutes Mission Control, Houston.

CAPCOM Challenger, Houston's with you at TDRS. How do you read?

SPACECRAFT Roger, loud and clear John.

CAPCOM Roger, and we're reading you loud and clear now.

SPACECRAFT Roger, and you've terminated the TV downlink have you not?

CAPCOM Roger, we are in the process of doing that Richard.

SPACECRAFT Okay.

SPACECRAFT Hey Dan, I'm going to do an audiometry with Bill.

SPACECRAFT Okay.

SPACECRAFT So I'm going off comm.

CAPCOM Challenger, Houston. I have a couple flight notes for you when you're ready.

SPACECRAFT Roger, Houston.

CAPCOM Okay, for your presleep activities we'd like the supply water dump. We want you to dump tank bravo to 15 percent. Okay, we would like you to delete the cabin repress tonight. We instead would like you to go ahead and reset the caution and warning limits per the reset caution warning limits in the orbit ops checklist 5-10. And then we would like you to take the cryo O2 and H2 tank 3 heaters A and B 4 switches to auto. Roger a good readback Dan. And in answer to the crew concern about having, if you want to pass this on to Richard too Dan, having interrupted the Z translation at ET sep you did not do that. All events occurred nominally and the data show that you moded to CSS 15 seconds after 104 transition.

SPACECRAFT Okay, thank you.

CAPCOM And a final note for you, the CFES team and the sample PIs haven't had much to do on the console throughout the flight because they think that you all have been doing such a super job and they'd like to pass along to you thanks for the great job you have been doing which has allowed them a lot of free time.

CAPCOM Challenger, Houston with you.

SPACECRAFT Roger, Houston. Loud and clear.

CAPCOM And Challenger, Houston. We have no data but we will be with you here for the next 6 minutes at Ascension.

SPACECRAFT Roger, John. Understand no data but you will be with us through Ascension.

CAPCOM Affirmative and just for your information right now Richard our general plan is to not talk to you anymore after Ascension so that you can go to sleep unless you want to say something to us at Guam.

SPACECRAFT Okay, John. Understand. We're just getting ready to sit down and have supper. We've been doing the presleep and you'll probably, we'll probably keep a couple of CRTs up until past Ascension. And if you see anything in Guam that's out of configuration for the evening give us a holler. Otherwise we'll just see you in the morning I reckon.

CAPCOM Roger, and we're standing by for your IMU align data when you're ready with that.

SPACECRAFT Oh, yes. Hang on. Okay, it was stars 5 1 and 2 0. Angle difference 92.4 Angle error .01 Delta angles for number 1 is - 0.02, + 0.05, -0.04 Number 2: -0.11, +0.01, -0.02 For number 3: -0.01, -0.23, +0.10 and the time was 1 day, 8 hours, 35 minutes and 27 seconds.

CAPCOM Roger we copy.

END OF TAPE

SPACECRAFT three minus 0.01 minus 0.23 plus 0.10, and the time was 1 day 8 hrs 35 mins and 27 seconds.

CAPCOM Roger, we copy, Richard.

SPACECRAFT Hey, John, I'm here, but we're going to close out the CFES in about 10 minutes. Everything went nominal.

CAPCOM Roger, we copy that. And, if you could give us the accumulator pressure you're currently reading on system 1 on spec 86 please.

SPACECRAFT Roger, stand by. And, Houston, CDR. One of the things you passed to Dan I wonder if I could clarify what portion of the manual cabin atmosphere management procedure did you want me to accomplish this evening?

CAPCOM Roger, Richard. On the, in the orbit pocket on 5-10, at the bottom of that, that little block that has the reset caution and warning limits.

SPACECRAFT Wilco, will do that.

SPACECRAFT And, Houston, Challenger. The accumulator pressure on hydraulic system 1 is 2344.

CAPCOM Roger, we copied Dan. Thanks.

SPACECRAFT And, Houston, Challenger, On the supply water dump, went through procedure on 5-2, just as we did this morning, but she's not dumping. All our dump valves are open, but the quantity in bravo hasn't started down, and I went down and took a peek out the side hatch window and we won't have the big shower like we had this morning.

CAPCOM Stand by one, Dan, please.

SPACECRAFT And, however John, the nozzle temps both indicate 230 something degrees and they're still climbing. The dump line temp indicates 95 degrees.

CAPCOM Roger, we copy.

CAPCOM And Challenger, Houston. We're going to be going LOS here in 40 seconds. Just as a note to you, keep an eye on the nozzle heaters, and if they get up around 300 degrees, go ahead and turn it off. We will see you at Guam at 10 + 48 and give you a call there.

SPACECRAFT Okay, John. That'll be fine.

PAO Mission Control, Houston. Challenger ending orbit number 23 as it crosses the equator in a few minutes. 30 minutes away from Guam which will be likely the last voice contact between the crew and Mission Control prior to their sleep period which according to the timeline starts at 11 hours into day 2. The hydraulic system 1 accumulator pressure on board reading is 2344 psi, which appears to be stable. The conjecture is that circulating the hydraulic fluid unstuck some sort of contamination that was causing one of the pumping valves or internal relief valves to stick slightly open, thereby causing a pressure drop. Not leaking externally but within the system itself. Returning in 30 minutes at Guam. This is Mission Control, Houston, 1 day 10 hours 19 minutes elapsed time.

PAO Mission Control, Houston. We have acquisition at this time through Guam for what will likely be the final air/ground voice communication with the crew Challenger prior to their sleep period.

CAPCOM Challenger, Houston's with you at Guam for seven minutes.

SPACECRAFT Roger, Houston. Read you loud and clear.

CAPCOM Roger, Challenger, Houston's with you at Guam for six minutes.

SPACECRAFT Roger, Houston. We terminated that supply water dump. Temperatures got up to 300 and nothing has started to dump yet.

CAPCOM Roger, we copy Dan.

SPACECRAFT (garble)

END OF TAPE

CAPCOM Roger, Challenger. Houston's with you at Guam for 6 minutes.

SPACECRAFT Roger, Houston. And we terminated that supply water dump. Temperatures got up to 300 and nothing's started to dump yet.

CAPCOM Roger, we copy Dan.

SPACECRAFT And then we went down and had supper so we haven't done anything more about it.

CAPCOM Roger that. We're working on something for you Dan.

CAPCOM Challenger, Houston. Your state vector is go for the next PLS on rev 33. And I have a question for Dr. Bill when he is ready to copy.

SPACECRAFT Okay, just a second.

SPACECRAFT Okay, Houston. He's listening. Go ahead.

CAPCOM Roger, for Dr. Bill. What are the MET times for us to dump and collect data during the night?

CAPCOM And Dan while he's working on that I have a question on an action that I'd like you to accomplish.

SPACECRAFT Okay. Go ahead.

CAPCOM Okay. Reference your accumulator pressure that you had on system 1. We went a rev and didn't see any change. Have now seen a decrease a little bit so we want to pump it up so that you won't get an alarm tonight. Therefore, if you would - we would like you to turn on circ pump number 1 for 1 minute and then put it back to GPC.

SPACECRAFT Roger, circ pump on for 1 minute and then back to GPC.

CAPCOM And don't do that Dan. Brake - brake. We have just sent a TIMBU up to do that for you.

SPACECRAFT Okay, thank you.

CAPCOM And Challenger, Houston. We would like you to get into configuration for the water dump please so that we can see the data.

SPACECRAFT Okay, I'll go through and set up for it again.

CAPCOM And Dan when you get all ready if you could just give us a mark when you start to dump on tank bravo please.

SPACECRAFT Okay.

CAPCOM And Challenger, Houston. We show that we need to get you into another attitude. You're in the tail sun but you're roll phasing is out of phase and therefore we would like you to change your roll attitude to +9.6 and initiate rotation at 1 day, 11 hours, 0 minutes. And we recommend B1 norm for the maneuver.

SPACECRAFT Roger, and say again that roll attitude. I missed that. I got the time and everything else.

CAPCOM Roger, +9.6.

SPACECRAFT Roger, roll of - That's 9 decimal 6 and begin it at 1 day, 11 hours, 0 minutes in DAP B1 normal.

CAPCOM Roger that Dan and just a reminder to get the RJDJs on for the maneuver.

SPACECRAFT Roger. Okay Houston. That was my mistake. I was late. Understand go to the new inertial attitude with a rolling of 9.6 in a B1 normal jets and then go back to B6 and initiate the rotation at 1 day, 11 hours and 0 minutes.

CAPCOM That's affirmative Richard.

CAPCOM And Challenger, Houston. We're going to go AOS here in 10 seconds. We will probably have to give you a call at either TDRS or Santiago at 11 plus 27.

SPACECRAFT Roger. I just opened the valves and I got it open on (garble) and the dump valve.

CAPCOM Roger. We copy Dan.

SPACECRAFT But I have no indication of a dump yet.

CAPCOM Roger. Understand.

PAO Mission Control, Houston. Loss of signal at Guam. Some final tidying up of the sleep configuration for the spacecraft primarily putting the hydraulic circ pump number 1 on the general purpose computer management overnight to keep that system pressurized so that it does not set off alarms that will wake the crew. One more pass upcoming in which the CAPCOMs will converse with the crew. Santiago in 29 minutes. Challenger nearing the end of orbit 23.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t96j 243:17:30 8/31/83 PAGE 1

PAO CAPCOM's will converse with the crew. Santiago in 29 min. Challenger nearing the end of orbit 23. As it crosses the equator, a new orbit count starts. At 1 day, 10 hr, 38 min, this is Mission Control, Houston.

PAO This is Mission Control in Houston. Fort, sec away from acquisition through Santiago, Chile Tracking Station. Flight Director, Harold Draughon is polling all of his operators here in the room for a go-for-sleep to the crew, which will be passed up at Santiago, and perhaps this will be the final pass before sleep. We should have acquisition through Santiago at this time.

SPACECRAFT Guy, how do you read downstairs?

SPACECRAFT I read you loud and clear.

SPACECRAFT Roger.

SPACECRAFT How do you read upstairs?

SPACECRAFT Loud and clear.

SPACECRAFT Rog.

CAPCOM Challenger, Houston with you at Santiago for 3 min.

SPACECRAFT Roger, Houston. Loud and clear. How us?

CAPCOM Loud and clear, Richard, and I have two notes for you we'd like you to copy.

SPACECRAFT Roger. Standby

SPACECRAFT Okay, Houston. We got the water dump going and we redid the manuver; however the manuver - - the manuver rate didn't quite get me there on time and when I started, about 1 min late. Go ahead and read your notes.

CAPCOM Okay. We copy, and your water dump does look good to us too. We concur. Richard, reference to the AV bay 1 sensor warning you received earlier today, to avoid a false alarm this evening, we would like you to go ahead and pull the circuit breaker on 015, row CHARLIE, smoke detection bay, one BRAVO slant 3 ALPHA.

SPACECRAFT Roger. I understand, to pull the breaker on 015, row CHARLIE to prevent another false alarm in AV bay 1.

CAPCOM Roger that. This disables both the 1B and 3A sensors. You still have the 1A and 3B sensors, and if you get an alarm this evening, we would like you to follow the normal procedures per the cue card.

SPACECRAFT Roger. Understand.

CAPCOM And Challenger, Houston, you guys really did a great job today with the INSAT deploy, the heat pipe TACAN testing, Ku-band, CFES, incubator, and all the good work Dr. Bill is doing, so a big round of applause from us down here.

SPACECRAFT Well, thank you, John. And sorry about the mistake on the roll maneuver right at the end of the day, but we sure enjoyed the day and really enjoyed deploying that INSAT.

CAPCOM Roger. No sweat. You guys really did great. We'll see you again tomorrow.

SPACECRAFT You bet. See you later.

CAPCOM And Challenger, Houston. Just a reminder, we still the TV's powered up.

SPACECRAFT Roger. In our checklist, the TV cameras were powered up because of the -XLV, I mean the solar inertial attitude. Over.

CAPCOM We concur, Richard. Our mistake. We are going LOS 10 sec. Have a good night's sleep.

SPACECRAFT Okay, John. See you later.

PAO Mission Control, Houston. No communication with the spacecraft on that last pass over Ascension. Challenger on the start of orbit number 25 now, coming up over Africa at the present time. The change-of-shift here in Mission Control is underway. On-going and off-going flight control teams have tagged up with each other, and that's about completed. They reviewed the activities of the day, and it was a very successful day, commencing with the deployment of the INSAT, the Indian National Satellite, on time and right according to plan. The Apogee Kick Motor of that satellite is due to be started at about 7:25 in the morning. That will circularize the orbit of that satellite at geosynchronous altitude. All of the runs on the Continuous Flow Electrophoresis System were completed, as well as the incubator operations, and that closes out both of those experiments for the flight. The group A of getaway specials was at - -

END OF TAPE

PAO All of the runs on the continuous flow electrophoresis system were completed as well as the incubator operations, and that closes out both of those experiments for the flight. The group A of getaway specials was activated on schedule and the heat pipe operations test was going well. Vehicle systems continue to look good at the present time. A few minor glitches during the day, most of which cleared themselves up. A drop in the hydraulic pressure which flight controllers believe was a valve that may have gotten temporarily clogged with some debris and they recycled that by turning on the circ pump, circulation pump and that appeared to free that. They had the conversation with President Reagan, a few hours ago. And they are now about an hour into their scheduled sleep period. We don't expect to hear from them again tonight. At 1 day 11 hours 54 minutes, mission elapsed time, this is Mission Control Houston.

PAO Mission Control Houston. 1 day 12 hours 16 minutes mission elapsed time. Just a reminder that we will begin the scheduled change of shift briefing with off-going flight director Harold Draughon as scheduled at approximately 2 p.m. central daylight time, this is Mission Control.

PAO Mission Control Houston. We're about to acquire data through the western edge of the tracking data relay satellite range, shortly, as the Orbiter proceeds along more than half way through orbit 26. Crew aboard the Challenger well into their scheduled sleep period. Have about 4-1/2 hours remaining. Things are quiet here in Mission Control. Flight controllers here have been reviewing the television that came down from the spacecraft today. Spacecraft systems look good. No error messages for quite sometime on the fault chart, and everything continuing to go quite well in the flight of STS-8. At 1 day 14 hours 18 minutes, missions elapsed time, this is Mission Control Houston.

PAO Mission Control Houston. Space Shuttle Challenger out over the south Pacific at the present time on the last of orbit number 27. Flight controllers in mission control continue to prepare the teleprinter messages to be uplinked this evening so that the crew will have them in hand when they wake up in about 3 hours. Everything appears quiet on the spacecraft, all the systems continue to look good, that is during the times that we are able to get data. Orbiter is in an orbit of approximately 167 by 159 nautical miles, taking 1 hr 30 min and 40 sec to circle the Earth. We have been asked earlier to review the situation that occurred earlier in the day when there was an alarm onboard the spacecraft indicating a heat source, or a combustion source in avionics bay 1.

END OF TAPE



PAO The crew did get an alarm, a claxton-type alarm, that occurred some time around 1 day, 11 hours into the flight, there are two sensors back in that avionics bay that is a compartment which includes a lot of the Shuttle's electronics, computers, and all the other type equipment, many of the black box type items and associated wiring harnesses. When they got the alarm, the crew was not in contact with the ground at that time, they were able to check and verify that they were not getting a similar indication from that other sensor in the same compartment, and therefore it was believed that the sensor that did send the message, that set off the alarm was overly sensitive perhaps to some out gassing by a new electronic's box in the avionics bay. It was also discussed at a press conference that the, that particular sensor had been removed from the Enterprise previously and because it was apparently overly sensitive sent back to the manufacturer for reconditioning and then put into this spacecraft. So that sensor is suspect, they do now have to go by a procedure, where if they get another alarm from the only remaining sensor in that avionics bay that they would need to cause the fire extinguishing material back in that avionics bay to be injected into that compartment. That's not a likely event and we don't expect to hear anymore about it during the flight. At 1 day, 16 hours, 6 minutes mission elapsed time, this is Mission Control Houston.

PAO This is Mission Control Houston, at 1 day, 17 hours, 4 minutes mission elapsed time. Challenger is on orbit number 28, now over the Indian Ocean, and the crew has about 2 hours in the remaining sleep period. Not much activity here this evening in Mission Control, the Flight Controllers have completed reviewing the teleprinter messages. We have been without data coming down from the spacecraft for a short period of time, the ground station, the TDRS ground station at White Sands, New Mexico has been having some difficulties this evening with their computer programs and managing testing of the tracking data relay satellite, which we were going to use on this last pass and were unable to make use of that. We anticipate having that in about 25 minutes. Until that time we would have no data coming down from the spacecraft from this point anyway as there's very few passes over the ground space tracking data network. At this time of night, or this point in the crew day as the ground track precesses westward during the day we get to a point where there are very little opportunities to pass over a ground station and have data or voice with the spacecraft. We do expect to come within range of the TDRS system in about 25 minutes and we should be back on getting data from that satellite at that time. This is Mission Control Houston.

END OF TAPE



PAO Mission Control, Houston, 1 day, 17 hours, 34 minutes mission elapsed time. The spacecraft is within range of the tracking data relay satellite we should be able to make use of that some time here shortly. It appears that the White Sands facility has its ground software problems under control and they expect to be operating here momentarily. The White Sands facility is continuing to do some testing with the tracking data relay satellite using the Orbiter. That type of testing does not require any crew activity, can proceed while the crew is asleep and the flight controllers will allow the White Sands facility to continue to use the Orbiter during this pass at least for those tests. The crew still has about an hour and a half remaining in the scheduled sleep period and we will probably hear from them over the Mila station on orbit #30. Perhaps, even over Orroral if they get up a little bit earlier than that.

CAPCOM Challenger, Houston, no reply required. We have lost S-band data and voice, we would like you to do the Comm lost procedure in the orbit pocket checklist, page 2-2, Comm lost multi-panels, step 3. Over.

SPACECRAFT Houston, Challenger, say again, please.

CAPCOM Roger, Richard, sorry to get you up but we have been without S-band data and Comm for several hours and we need you to regain it for us onboard on page 2-2 of the orbit pocket checklist, Comm lost multi-panels, step 3.

SPACECRAFT Thank you, Bryan, no problem.

PAO Mission Control, Houston at 1 day, 18 hours, 17 minutes mission elapsed time. During that least recent communication with the crew, Capcom Bryan O'Conner notified them that we had been without data from the spacecraft for about 3 hours which was actually total time as we mentioned earlier, the White Sands Facility, White Sands New Mexico Center that is operating through the tracking data relay satellite has been some computer or software problems this evening and we've had difficulty using the TDRS. The last time that we had used that was about 1 day, 15 hours, and 10 minutes and the ground had set up the Orbiter systems then to make use of the tracking data relay satellite which essentially put the spacecraft in a situation where the only communication other than voice communication that was possible was through the tracking data relay satellite in other words, it was not configured to use the ground station network. When we were unable to use the tracking data relay satellite due to the White Sands Facility problem. That also meant that the system was not making use of the ground station since the switches were in the position to make use of the tracking data relay satellite. We were without data for the flight controllers here to look at during the night to keep an eye on the spacecraft system for about 3 hours. That is

equivilant to approximately 2 revolutions, 2 times, 2 orbits, that is, and is what you might encounter this time of evening if you had say had problems on your only ground station that you might have passed over. Often we get an orbit where we pass over only one ground station during a 1 and a half hour revolution. And this would be a similar situation to where we had had a difficulty for example on a Santiago to Santiago pass and not been able to use that one intervening opportunity. It was decided since it had been 3 hours without an opportunity to see spacecraft data and that we were nearing the end of the crew sleep cycle that the ground would go ahead and awaken at least one of the crewmembers there to make a switch change onboard so they could go ahead and uplink the teleprinter messages and see the data from the spacecraft. They did want to get the teleprinter messages up so when the crew gets up, they can go ahead and get a start reading those messages and making their changes in plans for the next flight data . . .

END OF TAPE

PAO They did want to get the teleprinter messages up so that when the crew gets up they can go ahead and get a start reading those messages and make their changes and plans for the next flight day. We're at 1 day, 18 hours, 20 minutes, mission elapsed time, this is Mission Control Houston.

PAO This is Mission Control Houston at 1 day, 18 hours, 32 minutes, mission elapsed time. Just for clarification on what we talked about a little earlier, on the lack of data coming down from the spacecraft earlier this evening and the difficulties with the ground station working with the tracking data relay satellite. There was an approximately 3-hour period from mission elapsed time 1 day, 15 hours, 10 minutes to 1 day, 18 hours and 4 minutes, where there was no data received from the Orbiter. That was the result of a situation in which the Orbiter COMM system had been configured to operate with the tracking data relay satellite to allow the ground station at White Sands to conduct some testing through the TDRS with the Orbiter. As it turns out the White Sands station developed some software problems and was unable to use the TDRS with the Orbiter and that left the spacecraft, the Challenger in a situation where the ground could not command a switch back to the use of the ground stations so that the Flight Controllers here in Mission Control could get data coming down from the spacecraft and continue to monitor the onboard systems as they usually do. The only way to get around that was to wake the crew up, or at least one of the crewmembers up to through some switches on the panels up there, and allow the use of the ground stations. That permitted them then to see the data coming down from the spacecraft as we normally would pre-TDRS, passing over ground stations once in a while during this point in the flight path. So again that problem would really relate to the fact that without the White Sands facility being able to use the TDRS with the Orbiter, it was impossible to get the data without a special switch being thrown, or a series of switches on the Orbiter. Had it been debated a little earlier whether or not it was worth waking of the crew or worth waking one member of the crew at least, to do that switch, but because it had been about 3 hours since they had seen any of the system's data from Challenger, they decided again fairly near the end of the crew's sleep period to go ahead, wake someone up and have them throw that switch. That would enable them at some point to go ahead and send up the teleprinter messages which they were working on over the Dakar pass recently and have those available for the crew when they get up and stirring around, and to go ahead and take a look at their spacecraft data. The 3 hour gap there is no worse than you might experience under the old system of ground stations, where during the night you might encounter only one ground station during a 1 1/2 hour revolution of the Earth. And if you would have had some problem with that ground station, therefore leaving you for about 3 hours then without data as well, they did always have, when they were over a ground station, have a capability to communicate via UHF voice

STS-8 AIR/GROUND TRANSCRIPT t100j GMT 243:00:53 9/1/83 PAGE 2

communication with the spacecraft and that is what they used to wake someone and have them through the switch. At 1 day, 18 hours, 36 minutes mission elapsed time, this is Mission Control Houston.

END OF TAPE

PAO Mission Control, Houston, 1 day, 18 hours, 39 minutes mission elapsed time. The communications people reported that the teleprinter messages that were sent up recently over the Dakar pass did get up and those are onboard now for the crew when they decide to read them. During the Dakar pass, the data was looked at here in mission control, coming down from the spacecraft and all systems onboard the Challenger appear to be in good shape and the flight director indicates that he believes the crew is probably gone back to sleep. Don't have any other indications of activity. They have about 20 minutes remaining before they are supposed to be awake and if we let them go past the ground station pass at Orroral in about 13 1/2 minutes, we wouldn't be hearing from them until the Mila station over the U.S. in 49 minutes. This is Mission Control, Houston.

PAO Mission Control, Houston, 1 day, 18 hours, 53 minutes mission elapsed time. Standing by for acquisition through Orroral in eastern Australia where we expect to proceed with the wake up call for the crew. This is Mission Control.

("Wake up" Music)

CAPCOM Challenger, Houston, good morning.

SPACECRAFT A great song.

CAPCOM Yes, that really sounded good, didn't it?

SPACECRAFT (Garble) thought it was static, but I understood it clearly.

CAPCOM Well, Dale, that's funny, that's the same words I got down here.

SPACECRAFT Roger, Bryan, we got the morning teleprinter messages. We've been looking at them. Did the little manual business to help the Comm?

CAPCOM Yes sir, it sure did, we got data right away and tha helped out quite a bit and we have about 2 1/2 minutes left at Orroral. We do not have TDRS so next pass will be state side and I've got several notes if you're ready to copy.

SPACECRAFT Okay, Dick has his paper out, pencil, go ahead with the notes, Bryan.

CAPCOM Okay, these things apply to post-sleep activites or things fairly early in the day and then we plan just to stand by and not talk to you much more through your post-sleep. First of all, dump supply water tank bravo to 5%, it should take about 30 minutes. And then due to the dump problem we had yesterday, we would like you to perform the post-dump procedures, dump

termination per page 5-3, except leave the supply water dump isol valve open, talkback open. Rationale is this will protect the water, crosstie capability in the event of inability to dump water later.

SPACECRAFT Roger, Bryan, understand, anything else?

CAPCOM Roger, post-sleep activity for PCS manual cabin atmosphere management per Orbit Ops Checklist, page 5-10. Also on the cryos, panel R1, cryo 02 tank 3 heaters, A and B2 to off, H2 tank 3 heaters, A and B2 to off. Also we would like you to push in the circuit breaker for the smoke detector that we had you pull last night. That's main bravo smoke detector bay 1 bravo 3 alpha to open or to close rather.

SPACECRAFT Roger.

CAPCOM And just a note for a little later on, we are deleting the TV and also the planned IMU align and you can refer to message #20 alpha at your convenience this morning for the IMU procedure this morning. That's all I've got.

SPACECRAFT Okay, Bryan, I already read the message and I believe I got all your early morning instructions, how much time do we have left in the pass?

CAPCOM Okay, we are going LOS right now and we'll see you over the states at 18:30, make that 18:30.

SPACECRAFT Roger, Bryan and I'd like to thank you for waking us up just in time to see a beautiful night time view of the Nile (garble) River Valley in the Middle East with all the lights and also a real nice Australia pass.

CAPCOM That's super and that state side pass is at 19:30, see you there.

END OF TAPE

CAPCOM Oh that's super and that stateside pass is at 19 30, see you there.

PAO Mission Control Houston, 1 day, 19 hours, mission elapsed time. Challenger passing out of the range of the tracking station at Orroral and eastern Australia. Mission Control played the Illinois Fight song for Mission Specialist Dale Gardner, that's his alma moter. Commander Richard Truly reported that he received the teleprinter message and has been reading it and passed his appreciation for slightly an early wakeup this morning which enabled him to get a good view over the middle east of the Nile River Valley and a nice pass over Australia. We will be using only the ground stations for about the next 6 hours today. The White Sands facility will be using or doing some testing with the tracking data relay satellite involving a test facility here in Houston, a ground communication test facility. That'll be going on for about the next 6 hours so we will be communicating in our normal mode of using the ground stations. We're about 28 minutes from reacquiring and that will be through the Mila station over the U.S. on orbit number 30. This is Mission Control Houston.

CAPCOM Challenger, Houston with you over the States for 11 minutes. 2 minutes into the pass we'll have a 1 minute keyhole and we're standing by.

SPACECRAFT Roger Bryan, things are going well onboard, we're finishing up the business of the postsleep activities and getting ready to have some breakfast.

CAPCOM Roger and have a good breakfast.

SPACECRAFT Thank you Bryan, but we're ahead onboard this morning so if you have anything that you need done, whatever, don't hesitate.

CAPCOM Okay we'll give you a call if we can come up with something we need you to do.

SPACECRAFT Okay and just for your information, I'm communicating now in the walkie-talkie mode, and we configured the upstairs and downstairs the same way, and we're going to remain in this configuration for awhile this morning if you're reading us loud and clear.

CAPCOM Okay, yes we're reading you loud and clear.

SPACECRAFT And Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Roger, we've got an APU drain line temp 2 at 19 + 16, we took a look at it to see if it had any errors on it but it was reading 73 degrees. So I just let you guys take a look at that. And I did the supply water dump and she starting dumping first try like a champ this morning.

CAPCOM Roger we copy.

SPACECRAFT And one more piece of information, when we pushed in the alarm circuit breaker the - after a few seconds we got a repeat on Ave Bay 1 sensor bravo exactly like yesterday. Circuit test turned out exactly the same, but since then it has not triggered again and I'm leaving the circuit breaker closed until we can talk about it.

CAPCOM Roger.

SPACECRAFT And the fuel cell pressure has just come in.

CAPCOM Roger. Challenger, Houston. Richard, we'd like you to leave the smoke detector circuit breaker in, the data shows that that sensor is jumping around just a little bit, we don't see anything from the other sensor and we'll keep an eye on them.

SPACECRAFT Okay. Houston, CDR.

CAPCOM Go ahead.

SPACECRAFT Bryan I want to make sure that I stay 100 percent in sync with you guys on this PCS. You want me to go back to our normal mode now of doing the manual cabin atmosphere management, that is, in the morning (garble) and do the step C&W limits as part of that procedure, is that correct?

END OF TAPE

SPACECRAFT - - part of that procedure, is that correct?

CAPCOM Stand by. Challenger, Houston Richard that's affirmative, we would like you to do the set C&W limit portion of that manual PCS procedure.

SPACECRAFT Okay, in work. And Houston, you can ignore that SM alert on PP02 limits (garble).

CAPCOM Roger. Challenger, Houston, 10 seconds to LOS, we'll see you at Dakar next and we'd like you to cycle CIRC pumps 1 and 3 to OFF and back to GPC for us please.

SPACECRAFT Roger, we'll see you there and CIRC 1 and 3 are going OFF in the GPC.

PAO Mission Control Houston, 1 day 19 hours 42 minutes mission elapsed time, Challenger just passed out of range of the Bermuda tracking station on orbit number 30 and will be picking up again in about 3 minutes, over the Dakar station. The crew just now getting in there activities, the typical early morning housekeeping activities like inertial measurement unit alignments, water dumps, fuel cell purges, that sort of thing. Commander Dick Truly reported that when they reset the circuit breaker on the sensor, the smoke sensor in avionics bay number 1, they got the alarm again that they had got yesterday. And they unplugged it, they'll going to reset it I believe and leave it punched up so that they can monitor it's activities today. The flight controllers here in mission control reported that sensor appears to be jumping around a little bit, that is it's very sensitive to any changes back in the avionics bay, the other sensor, the redundant sensor not reporting any problem back in that bay. When one of those gets an indication that there is some combustion or product, smoke product, anything like that, it triggers a high priority alarm and gets the crew's attention right away. This particular sensor that we spoke about yesterday, the one that has been throwing the alarm was one originally on the Enterprise, and had shown some tendency to be overly sensitive when it was on the Enterprise, it was taken out, sent back to the vendor, reworked, and put into the Challenger, apparently it still has a tendency to be sensitive. The other sensor in that same avionics bay indicating no problem back there. The crew said they're a little bit ahead on their preparations this morning, getting a good start on the day, they got up just a little bit earlier today, they were awoken ahead of schedule so that they, flight controllers could get the crew to reset the switch enabling the spacecraft data to flow down to the ground through the ground tracking system, rather than through the tracking data relay satellite. Challenger had been configured to operate through the satellite during the evening while the crew was asleep. The White Sands station which uses its computers to work with the TDRS and relay those messages and

the data to the Orbiter had some difficulty, we were unable to use the tracking data relay satellite and the switches remained configured where the ground stations could not be used so it was decided since the spacecraft data had not been flowing down to mission control for about a 3-hour period that they would wake the crew a little bit early and have them reconfigure those switches on the communications system. We will be operating with the ground tracking network for at least the next six hours while the White Sands facility conducts some tests with the TDRS using a- -

CAPCOM Challenger, Houston with you at Dakar and Madrid for 5 minutes.

PAO - - using a laboratory here in Houston.

SPACECRAFT Roger, Houston, loud and clear and the system 2, 14.7 cabin reg inlet is open and we're pumping up the cabin with 02.

CAPCOM Roger. Challenger, Houston, you can terminate the water dump.

SPACECRAFT Wilco.

CAPCOM Challenger, Houston, didn't have time to tell you over the states but we wanted you to cycle those CIRC pumps 1 and 3 so that we could see the data during a cycle and that's the reason we asked you to do it at that time.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t104j 244:02:19 9/01/83 PAGE 1

CAPCOM Challenger, Houston, you can terminate the water dump.

SPACECRAFT Wilco.

CAPCOM Challenger, Houston, didn't have time to tell you over the states but we wanted you to cycle those circ pumps 1 and 3 so that we could see the data during a cycle and that's the reason we asked you to do it at that time.

SPACECRAFT And Bryan, I understand from the mission summary message that we got good high data rates through the TDRS S-band yesterday?

CAPCOM That's affirm. People were a little bit suprised here, it worked out real good. Especially the STS-9 folks, they are real happy with that.

SPACECRAFT Well some of those (garble) engineers had a few DP's stuck in their hip pocket and I guess they did.

CAPCOM That's what it sounds like.

SPACECRAFT And Bryan, the water dump's been stopped. The dump isol valve, I left that open as for your notes. And did you catch that circ pump cycle before you went AOS, OS last night, or you want to do it again?

CAPCOM We caught that and I just was letting you know here at Dakar why we asked you to do that. We ran out of time to give you a rationale last pass but we did catch it.

CAPCOM Challenger, Houston, we're about to go LOS, we'll see you next at IOS at 20 + 04. And we see the drain line temp, APU 2 drain line temp that you talked about a little before toggling on the high limit and we are going to work an FDA change down here. We'll get back to you later.

SPACECRAFT Okay, Houston, we copy that and we'll see you at -

CAPCOM Roger, that will be IOS at 20:04.

SPACECRAFT Roger, Houston and the post-sleep stuff except for eating breakfast is complete except for the IMU align and I'll wait on your call on that.

CAPCOM Roger that.

SPACECRAFT Houston, if you're still there, the MS3, you can tell the data people - -

STS-8 AIR/GROUND TRANSCRIPT t104j 244:02:19 9/01/83 PAGE 2

CAPCOM Challenger, Houston, we are not still there anymore.

PAO This is Mission Control at 1 day, 19 hours, 56 minutes mission elapsed time. Passed out of range of the tracking station through Dakar and we'll be picking up in about 7 1/2 minutes over Indian Ocean Station. We are announcing our intention that we are cancelling the change-of-shift conference which would have been at 10:00 p.m. with the off-going Flight Director, Jay Greene. It appears to be no compelling reason to hold that press conference at this time and we are cancelling that. We'll be picking up over the Indian Ocean Station in about 7 minutes, this is Mission Control, Houston.

END OF TAPE

PAO This Mission Control, Houston, 1 day, 20 hours, 2 minutes mission elapsed time. We are going to reverse ourselves here momentarily, apparently there's some interest been given and having that press conference so we are going to go ahead and have one at approximately at 10:00. And that's central time, so in about half an hour, we will have Flight Director, Jay Greene over in room 135, building 2 and we will be available for the press at that time, this is Mission Control.

CAPCOM Challenger, this is Houston with you through Indian Ocean for 8 minutes.

SPACECRAFT Roger, Houston, read you loud and clear.

CAPCOM Roger, Dan, you are loud and clear also and I got 1 flight note for you on your IMU align with a star of opportunity this morning when you are ready to copy.

SPACECRAFT Stand by just a second. Okay, Houston, I guess I'll write on this paper, go ahead?

CAPCOM Okay, Dan, this morning we noticed that items 2 and 3 stars 40 and 14 that are in your table now are good and we would like you to align with those stars via message TPR-20 alpha.

SPACECRAFT Mary, if you could just stand by a second, you came in pretty broken that time. We are using the mike, let me (garble) and I'll ask you again.

CAPCOM Okay, I'll say it again when you get ready for it.

SPACECRAFT There are some times that the data people can look for 2 DOG's. The first one is day 01 hour, 02 minutes, 03, that's the finish time and on the second one, look for start time, day 01, hour 11, minute 36.

CAPCOM Roger, Bill, we copy that.

SPACECRAFT And I'll have, I didn't have a time last night to provide them with a summary but I'll get them a summary some time this morning of yesterday.

CAPCOM Okay, sounds good to us.

SPACECRAFT And Houston, CDR, try again on IMU's.

CAPCOM Okay, Richard, in your star table right now, you have item 2 star 40, item 3 star 14, they are good and we would like you to align using those two stars via teleprinter message 20-alpha.

STS-8 AIR/GROUND TRANSCRIPT t105j 244:02:31 9/01/83 PAGE 2

SPACECRAFT Roger, Mary. Came through loud and clear that time. Got it. Thanks.

CAPCOM You are welcome.

CAPCOM Also on panel A7, we'd like you take your MAD strain gages to on please.

SPACECRAFT Okay the MAD strain gages on.

CAPCOM Thanks, Dan, that systems getting cold, and we wanted to warm it up.

SPACECRAFT Roger.

CAPCOM And Challenger, Houston, we are going to reconfigure our NSP's back to system 2 and so we're switching NSP's, you will get a message. Please disregard.

SPACECRAFT Roger, we'll be watching for it.

SPACECRAFT Houston, the align is in progress. Do you need ther numbers?

CAPCOM Thanks, Richard, but we've got them here.

SPACECRAFT Okiedoke.

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, talk to you again through Yarragadee at 20:20.

SPACECRAFT Roger, Houston, we'll see you there. There sure is a lot of ocean in the world. We're just fascinated looking at all of these beautiful clouds.

CAPCOM Challenger, this is Houston with you through Yarragadee for about 10 minutes.

SPACECRAFT Okay, Mary, loud and clear.

CAPCOM You're loud and clear too, Dale.

CAPCOM Everybody's downstairs shaving and getting cleaned up. (garble) first up this morning.

CAPCOM That sounds like a good idea.

END OF TAPE

SPACECRAFT Mary have ya'll sent up a vector yet this morning, I'm - we need to know we need to reprogram our little computers here.

CAPCOM We'll check on that, just a second Dale. Challenger, this is Houston, Dale we have not put in a new state vector this morning, you're still running on the one that was put in last night and it's holding real well.

SPACECRAFT Okay, thanks, Mary. Okay and for GNC the item is done and the startrackers are back in track.

CAPCOM We copy that. Challenger, this is Houston, we're 10 seconds from handing over, over Australia, to Orroral, we'll lose you for about 20 seconds and we'll pick you up for another 5 minutes.

SPACECRAFT See you there.

CAPCOM Challenger, this is Houston, we're back with you now through Orroral for 5 minutes.

SPACECRAFT We got you, Mary. And, Mary, you can ignore the S76 comm message, I was just fooling with VTR.

CAPCOM Okay, Dal, we'll do that, thanks for the info. We got, we would like to send a TMBU up to increase the limit on the APU fuel drain line and so we need to have you resume where the spec 60 was, we're not sure what CRT it was on.

SPACECRAFT Okay, spec 60 is now on CRT 4.

CAPCOM Roger, Dale, we'd like you to resume the spec 60, it was overlayed and we couldn't send the TMBU up with it, in the system like that.

SPACECRAFT Okay, I just resume that we're back to the antenna display on CRT 4.

CAPCOM Okay, Dale, thanks looks good now. Challenger, this is Houston, we're 30 seconds LOS we'll talk to you again through Mila at 21 04.

SPACECRAFT Goodbye.

CAPCOM Bye, bye, Dale.

PAO This is Shuttle Mission Control, at 1 day 21 hours 1 minute Mission Elapsed Time, just about 3 minutes away from acquisition of signal through Mila after an LOS of about 30 minutes duration with the TDRS down for the time being. This has been one of the longer LOS periods so far during STS-8 and

already the TDRS testing appears to have spoiled us for the frequency of contact that we have been enjoying over the past nearly two full days of this mission. The mission control team here in the control center has been watching playback of some of the video acquired earlier in the day from Challenger including the replay of the deployment sequence of the INSAT and other on-orbit video including the telephone conversation with the President of the United States which occurred just before the sleep period begin on Wednesday and we're about 2 minutes away from voice contact at 1 day 21 hours 3 minutes mission elapsed time, this is Shuttle Mission Control.

CAPCOM Challenger, this is Houston, with you over the states for 13 minutes.

SPACECRAFT Okay, Mary, loud and clear.

CAPCOM You're loud and clear too, Dale.

SPACECRAFT And the breakfast menu this morning is cereal, coffee, eggs and some orange juice and Bill Thornton was the cook.

CAPCOM Sounds good to us, we're thinking about a burrito run.

SPACECRAFT That does sound good right now. Except for Brandenstein, he's yelling up from the middeck that that does sound good. Mary one more thing, between, while we're over the Pacific there coming towards Mila I tried turning on, well the cameras were all on but I brought them all up on the monitors just to see how they made it through the night and unfortunately one did not make it through the night so good, camera delta which is our only wide angle color, I get no picture on it. I secured it about 15 minutes ago, just to leave it off for awhile and in a little bit here I'll turn it on and we'll see if we got a picture back. But it doesn't look too good.

CAPCOM Okay, Dale, we copy that.

END OF TAPE

CAPCOM Okay, Dale, we copy that.

SPACECRAFT And Houston, Challenger, I just powered camera D back on and still no joy. Just have a totally gray picture on the monitor all the rest of the camera appear to be working properly.

CAPCOM Okay, we copy that.

SPACECRAFT And Mary, yes, you probably guessed, I tried everything, you know, opening the iris, closing the iris manually, hitting all the buttons. It does tilt and pan okay. I've put camera C on it so I can see it and camera D does move around but just no picture.

CAPCOM Okay, Dale, we copy that and INCO will look at it for you. And Challenger, this is Houston, we have a smoke detector test we'd like for you to run when you're ready to copy.

SPACECRAFT Okay, Mary, go ahead.

CAPCOM Okay, we'd like you to perform a smoke detector test on the system A sensors. And if Ave bay 1 alpha sensor tests good then we'd like you to go to panel 15, row charlie and take smoke detection bay 1 bravo/3 alpha, the circuit breaker to open.

SPACECRAFT Okay, I'll sure do that and we did, I forgot to tell you but during LOS, we did get one more trip of 1 bravo so I would like to do that if we could and I'll check alpha.

CAPCOM Okay, Dick, we copy that.

SPACECRAFT Houston, the A sensors check okay so I'm going to pull the circuit breakers.

CAPCOM Okay, Richard, we concur with that.

CAPCOM Challenger, this is Houston, we're 20 seconds LOS, we'll talk to you again through Dakar in about 5 minutes at 21 + 20.

SPACECRAFT Roger, Houston, we'll see you at Dakar and we're about halfway through breakfast. Everything is going real fine onboard this morning.

CAPCOM Sounds real good.

SPACECRAFT See you there.

CAPCOM Bye, bye.

PAO This is Mission Control, Houston, at 1 day, 21 hours, 17 minutes mission elapsed time. Mission Specialist, Dale Gardner, during that pass reported the failure of the video camera D, delta. It's a wide-angle, color camera mounted on the forward bulkhead, looking aft on the starboard side of the vehicle. The suspicion is that the temperature extremes experienced during the tail sun attitude overnight may have promoted the demise of that unit but the INCO here is looking at possible ways of trying to recover that unit. Brief LOS of about 2 more minutes remaining before we reacquire through Dakar. This is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you through Dakar for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM You're loud and clear too, Dick.

SPACECRAFT Is our Dakar capcom still over there, do you know? talking about Bud.

CAPCOM Roger that, we are trying to figure it out.

END OF TAPE

SPACECRAFT Is our Dakar CAPCOM still over there, do you know? I'm talking about Bud.

CAPCOM Roger that, we're trying to figure it out. Richard, they left Dakar, they're back home.

SPACECRAFT Incidentally Mary, sometime today, if we can find somebody that's got an opportunity, we're going to try to go through all the vis-OPS sites and make an estimate of the ones that we think we've gotten photos of and also take stock of how much 70 mm film that we have onboard, but we have at least eyeballed a great number of the Pacific sites that we had planned before the flight and naturally a lot of things that we hadn't planned.

CAPCOM We copy. Challenger this is Houston, we're 30 seconds LOS, we'll talk to you again through Indian Ocean at 21:40.

SPACECRAFT Roger Houston, we'll see you there.

PAO This is Shuttle Mission Control at 1 day, 21 hours, 39 minutes mission elapsed time. We're just a few seconds away from AOS through Indian Ocean station and everything should still be fairly quiet onboard Challenger as the crew progresses through the presleep period. And we anticipate voice contact just momentarily as Challenger passes along South Africa on the descending node of orbit 31.

CAPCOM Challenger this is Houston, with you through Indian Ocean for 7 minutes.

SPACECRAFT Roger, Mary.

CAPCOM And Challenger, I have about 3 notes to go over with you when you're ready to discuss something.

SPACECRAFT Give us about 1 minute, Mary.

CAPCOM Sure will.

SPACECRAFT Okay, it was a fast minute, Dick's got his pencil and paper out. Go ahead.

CAPCOM Okay, well first, Dale, if you, the only thing that we've come up with so far for that camera delta is for you to check the circuit breaker on panel R15 row echo, labeled starboard RMS camera heater.

SPACECRAFT Okay, Dan's looking at it right now, just hold on, we'll give you the result.

END
DATE
FILMED

OCT 27

1983



National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

STS-8 AIR GROUND TRANSCRIPT
VOL. II
MET 01:22:33 THROUGH MET 04:04:30

PUBLIC INFORMATION OFFICE
NASA JOHNSON SPACE CENTER
HOUSTON, TEXAS 77058

STS-8 AIR/GROUND TRANSCRIPT t108j 244:03:53 9/1/83 PAGE 2

CAPCOM Okay we're standing by.

SPACECRAFT Okay, all the camera delta circuit breakers are in.

CAPCOM We copy that. Then we would like for you to go on panel L1 and take flash evaporator primary A off, because we have no further requirement for the flash evaporator until entry day.

SPACECRAFT Okay that's done.

CAPCOM And the third one's for Richard, with the vis-OPS comment. We have support here for about 1 more hour, and if you would like to go over the vis-OPS stuff with support available here we'd be glad to talk to them at any time.

SPACECRAFT Roger, you say you have the vis-OPS support people there for 1 more hour today?

CAPCOM That's firmative, Dick.

SPACECRAFT Okay. Let us see if we can get organized to get somebody to review where we think we are and we'll try to pull it together real quick.

CAPCOM Sounds good to us.

SPACECRAFT Super.

CAPCOM And Challenger, this is Houston, if you would check the teleprinter message for message 21.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t109j 244:04:15 9/1/83 PAGE 1

CAPCOM Sounds good to us.

SPACECRAFT Super.

CAPCOM And Challenger this is Houston, if you would check the teleprinter message for message 21. Challenger this is Houston, we're 30 seconds LOS, we'll talk to you through Yarragadee at 21:56 in about 8 minutes.

SPACECRAFT Okay. Sounds good and we'll be stowing the radiators in just a minute and we was glad to get back to --ZLV so we can see the Earth. We've done message 21, thanks.

CAPCOM Thank you. Challenger this is Houston with you over Australia for about a sum of 12 minutes with a 1-minute keyhole. Challenger this is Houston, with you over Australia for about 12 minutes.

SPACECRAFT Okay Mary, loud and clear.

CAPCOM You're loud and clear too, Dale.

SPACECRAFT Radiators are stowed.

CAPCOM Houston. We copy that. Go ahead, Challenger, this is

SPACECRAFT Roger.

CAPCOM Right, we're ready to copy, we've got 2 minutes here and then a 1-minute keyhole and then 2 minutes on the other side.

SPACECRAFT Okay.

CAPCOM Roger, we've got about 2 minutes in Yarragadee, a 1-minute keyhole and then 2 minutes in Orroral left on this pass.

SPACECRAFT Okay. Why don't you - -

CAPCOM Okay, I'll do that. Challenger this is Houston, we're 20 seconds to a 1-minute keyhole and we'll pick you up on the other side. And the Luaí chairman says it's a great day for ace. Challenger this is Houston, with you through Orroral for 2 minutes.

SPACECRAFT Okay Houston, real quickly, the sites that we believe that we have taken photos of is as follows. The eastern edge of one bravo right on the coast there, 2 alpha, 3 alpha, 3 bravo, 4 alpha, number 5, 6 alpha, on 7 alpha we saw Quito and took one photo, although it was a little cloudy and not very high sun angle. We think we got a good shot of 7 alpha the eastern

STS-8 AIR/GROUND TRANSCRIPT t109j 244:04:15 9/1/83 PAGE 2

most of - site, 8 alpha, 8 bravo, 8 charlie we got a visual on, no photos, it was the middle of the night. 9 alpha and bravo, a visual on 10 bravo, 11 alpha, bravo and charlie. Number 12 which had to be one of the most beautiful sites, which is the (garble) Islands, out in the south Pacific, 13, 14 bravo and charlie, 15 charlie, 16 bravo. We've got about 12 cassettes of 70 mm left. It's hard to summarize the Ocean views, we have visually seen a number of sites, locations of large eddies and internal waves including some internal waves that are curved similar to some of the (garble) radar that we saw in (garble) Sea off STS-2.

CAPCOM Roger we copy and we're 8 seconds LOS. We'll talk to you through Buckhorn at 22:34 and it sounds like you've been busy.

SPACECRAFT Roger that, see you later. And we're just crossing the, we're just coming up on the south edge of the Great Barrier Reef.

END OF TAPE

PAO This is Mission Control, Houston at 1 day, 22 hours, 33 minutes mission elapsed time, we are about a minute away from acquisition and signal through Buckhorn after another fairly long LOS period of about 34 minutes. Challenger on orbit 32, Commander, Dick Truly doing some exercise on the (garble) treadmill at this time, Pilot, Dan Brandenstein is scheduled to be doing some activity for the get-away special. Mission Specialist, Dale Gardner will be setting up some TV to cover the PFTA testing and Mission Specialist, Guy Bluford would be working with Dr. Bill Thornton on some biofeedback experiments. And we should have voice momentarily, this is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you over the states for about 18 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM Loud and clear too, Richard.

SPACECRAFT Mary, where are we right now?

CAPCOM You are right over northern Mexico, northwestern Mexico.

SPACECRAFT Nice and clear night, we see alot of cities below us. The reason I had to ask you is because we've got the lights turned off in the flight deck. It looks like three of four hundred miles to the north is a large area of thunderstorm activity.

CAPCOM We copy that.

SPACECRAFT Roger, Houston, we're - this tail sun attitude and this - over here on this side is - we're looking out the aft windows right across the OMS pod straight down at large cities and going right down a whole series of towns and cities we can see every street.

CAPCOM Copy that, Dick.

SPACECRAFT And down in this part it's real clear, there is an occasional thunder bumper or two but it's real pretty.

CAPCOM Sounds real nice.

SPACECRAFT Sure beats working for a living, Mary.

CAPCOM Looking forward to it.

SPACECRAFT And Mary, I know Jeff is not going to believe this but we just had a jet fire in the aft, of one of the verniers firing in the aft and the whole right side of the tail and the

STS-8 AIR/GROUND TRANSCRIPT t110j GMT 244:04:41 9/1/83 PAGE 2

right side of the OMS SPAS looks like it's glowed for a second, or glowed for several seconds.

CAPCOM Sounds like good fireworks. And Jeff believes it.

SPACECRAFT At this point, we're essentially, the port side of the vehicle is into the velocity vector.

CAPCOM We copy.

SPACECRAFT Now we are getting down to the area that, getting wet. There's a lot of thunderstorms right below us.

CAPCOM Looks like you are right over the Cape, now.

SPACECRAFT You're kidding me?

SPACECRAFT Okay, now I'm oriented, we can, the entire state of Florida is just dry land, right? We can see Ala and we can see all the eastern seaboard, although up around the Carolinas and up north it's beginning to get cloudy. I guess the biggest thing, we didn't realize it because we hadn't looked at the map but I guess the biggest and clearest city that we saw was probably New Orleans.

CAPCOM Okay, we copy that.

END OF TAPE

CAPCOM Dale, this is Houston, we have looked at the camera delta over Goldstone and have found that we can concur there are problems with the camera. Hopefully we'll be able to check it again when we go to a warmer attitude and maybe it will work then.

SPACECRAFT Roger, Mary, Dale, is coming to the phone.

SPACECRAFT Okay, Mary, copy, thank you.

CAPCOM You're welcome. Challenger, this is Houston, we are 30 seconds LOS, we'll talk to you again through Dakar at 22:56 then. Thanks for the tour of the Gulf.

SPACECRAFT You bet, Mary, see you later.

CAPCOM Challenger, this is Houston with you through Dakar for 9 minutes.

SPACECRAFT Hello Houston, read you loud and clear. Got a question for you.

CAPCOM Go ahead, Dan.

SPACECRAFT Roger, I came into a CAP on the RCS regulator reconfiguration and it (garble) every preflight there was some one of the helium presses and I think it was a right, but I'm not sure. There was something strange about it, I was just wondering if you want that reconfiguration down as written.

CAPCOM That's affirmative, Dan and there was a problem with the right alpha but they'll watch it so we'd like the configuration per the checklist.

SPACECRAFT Okay, in work, thanks.

CAPCOM Challenger, this is Houston, we are 30 seconds LOS, we'll talk to you again through Botswana at 23:15.

SPACECRAFT Roger, Mary, we'll see you at Botswana and Dale and I are just about through getting ready to do the TDRS stuff and we're looking forward to it.

CAPCOM So are we.

PAO This is Mission Control, Houston at 1 day, 23 hours, 6 minutes mission elapsed time. About 10 more minutes before we acquire signal again through Botswana. A variety of activities going on onboard the Challenger right now principally aimed at setting up camera and preparing for RMS, remote manipulator system operations and exercises with the payload flight test article and all that activity will begin

STS-8 AIR/GROUND TRANSCRIPT t111j 244:05:20 09/01/83 PAGE 2

approximately 50 minutes from now and the onset of the PFTA testing will certainly usher in a more active period of dialogue and exchange of information between the ground and the spaceship. Challenger on orbit 32. Mission elapse time, 1 day, 23 hours, 7 minutes, this is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you through Botswana for 2 minutes.

SPACECRAFT Hello, Houston, we heard a short burst but then you cut off.

CAPCOM Hidy, Dan, we're with you for 1 minute now through Botswana.

SPACECRAFT Okay.

CAPCOM Challenger, this is Houston, we'll lose you for about 3 minutes and then pick you up through Indie Ocean.

SPACECRAFT Okay, we'll see you at Indie.

CAPCOM Challenger, this is Houston.

SPACECRAFT Roger, Houston, read you loud and clear.

CAPCOM You're loud and clear too, Dan, and we only have you for about 45 seconds and we'll talk to you through Yarragadee at 23:32.

SPACECRAFT Rober, Mary, we'll see you there.

CAPCOM Challenger, this is Houston with you through Yarragadee for 8 minutes.

END OF TAPE

CAPCOM Challenger this is Houston, with you through Yarragadee for 8 minutes.

SPACECRAFT Roger Houston, loud and clear. Took me a second to find the walkie-talkie.

CAPCOM You're loud and clear too, Richard. Challenger this is Houston, the PI, the GAS can, 475 is curious if you have time could you read us the deactivation time on that. If not that's okay too. Challenger this is Houston, say again last transmission.

SPACECRAFT Roger, your last transmission was broken, I understood that you wanted to know what time we did the GAS activation group bravo, is that correct?

CAPCOM That's affirmative, only if you have time, Dan.

SPACECRAFT Roger, have it right here at the tip of my fingers. Group B was activated at 1 day, 22 hours and 5 minutes.

CAPCOM Roger, Dan. And do you have the deactivation time also?

SPACECRAFT Oh, for the PRM? Just a minute let me get that info. Mary on the PRM I didn't get to log the MET but in the (garble) the thing had run for 15 hours, 15.44 hours.

CAPCOM Roger, we copy that, Dan, and let me confirm that that group bravo you gave us was a deactivation time.

SPACECRAFT Well let me check the cue card.

CAPCOM Challenger this is Houston, we're 10 seconds LOS, talk to you through Hawaii at 23:58.

SPACECRAFT Roger.

PAO This is Mission Control Houston at 1 day, 23 hours, 41 minutes mission elapsed time. We'll be out of touch with the crew for 17 minutes, reacquiring through Hawaii. During this orbit we'll be in quite a bit of voice contact with Challenger as the crew begins to prepare for the RMS operations and PFTA testing. We go in rapid succession up through ground station coverage from Hawaii to Buckhorn to Mila, Bermuda, Dakar and Ascension Island tracking stations and quickly into Botswana and through Yarragadee, so we'll have a great deal of voice contact. During the run up and test portion of the PFTA activities this morning. This is Mission Control Houston.

CAPCOM Challenger this is Houston, with you through Hawaii for 7 minutes.

STS-8 AIR/GROUND TRANSCRIPT t112j 244:05:52 9/1/83 Page 2

SPACECRAFT Loud and clea, Mary, we just started PH1-2 of the RMS checklist.

CAPCOM You're loud and clear too, Dale, and looks like you're right on schedule.

SPACECRAFT Actually we've finished 1-2, we're just getting ready to deploy the RMS (garble) 1-3.

CAPCOM We copy that.

SPACECRAFT And Mary per our last discussion on the GAS, I probably used the wrong words and got you a little bit confused there. At 1 day, 22 hours and 05 minutes we did group B which is a deactive relay 06 of GAS number 3.

CAPCOM Okay Dan, thanks a lot.

PAO This is Mission Control Houston. Data indicates that the Challenger is in the -2LV attitude free drift for PFTA testing and the crew affirming that Richard Truly and Dale Gardner had begun the RMS power up activities prior to PFTA testing.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t113j 244:06:32 9/1/83 PAGE 1

PAO Richard Truly and Dale Gardner have begun the RMS powerup activities, prior to PFTA testing. Challenger now in its 2nd day in space, in its 3rd day in space, mission elapsed time is 2 days 0 hours 0 minutes. RMU systems officer here in the control center verified that the remote manipulator system has been released and deployed based on data he's looking at, at his console. RMU systems officer monitoring his data and affirming to the flight director that the crew is moving briskly through the RMS checklist operations.

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, we'll lose you for 3 minutes and pick you up over the states at 00 08.

SPACECRAFT Okay, Mary, we're on flight supplement page 1-2, that's right at the top.

CAPCOM Okay, thanks, Dale.

PAO This is Shuttle Mission Control, at 2 days 0 hours 5 minutes mission elapsed time, we've had loss of signal through Hawaii and we'll pick them up again through Buckhorn in about 2 and a half minutes. There will of course be two segments of PFTA operations, today's exercise will involve grappling with fixture number 2 in the payload flight test article. And tomorrow morning on flight day 3 at mission elapsed time of 3 days 2 hours 20 minutes, the remote manipulator system will be exercised and will grapple with fixture number 5. The remote manipulator system will be used in unberthing and berthing the payload flight test article and will place it in numerous positions while operating Challenger's attitude control system in various modes, including free drift as it's in now, to determine the response in flight. And those responses will be used in comparison with ground data and that's a verification of a ground computer simulations and engineering models. The data will be used in determining the response of the RMS system as well the Orbiter's in the handling of larger payloads for future missions, such as the long duration exposure facility and the solar maximum mission that will be flown, a solar max satellite mission which will be flown on STS-13. The payloads flight test article weighs in at about 7,460 pounds. We're just 30 seconds away from acquisition of signal, on orbit 33 at mission elapsed time, 2 days 0 hours 8 minutes, this is Mission Control Houston.

CAPCOM Challenger, this is Houston, with you over the states for 19 minutes. Copy that, Richard?

SPACECRAFT (garble) grapple picture 2 (garble) in the darkness. It works like a champ.

CAPCOM That sounds great.

STS-8 AIR/GROUND TRANSCRIPT t113j 244:06:32 9/1/83 PAGE 2

SPACECRAFT Okay, Houston, we got a good capture with the bottom of 1-2. And also we're in the darkness so we did not use the 16 mm so I put it on the VTR.

CAPCOM Roger, Richard, we copy that and we concur.

PAO Mission Commander Richard Truly, advising the flight control team that the - -

END OF TAPE

CAPCOM Roger, Richard, we copy that and we concur.

PAO Mission Commander Richard Truly advising the Flight Control Team that the remote manipulator system grapple fixture has captured fixture number 2 on the payload test article and that the mechanical arm on the manipulator system has originated. Richard Truly of course performed RMS operations also during STS-2 when he was pilot of Columbia.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead Challenger, Houston here.

SPACECRAFT Roger, right now I'm looking straight down at the Gulf Freeway, the center of Houston, Galveston, Clear Lake, the Johnson Space Center, looks beautiful, even Seabrook.

CAPCOM Roger we copy that, it may be a little wet.

SPACECRAFT Well I tell you, it sure looks pretty. Tonight we can see all along the Texas coast.

CAPCOM Well I'm sure some folks are out in their back yards trying to see you too, Richard.

SPACECRAFT Well tell them to look straight up. And incidently as we understand, August 30th we were a little busy because we lifted off early that morning, but 147 years ago Houston was founded and we'd like to wish the City a happy birthday. We're proud to live there and it's home of the space program and we're looking right at you.

CAPCOM Thanks and all the folks in the MOCR would like to join you too.

SPACECRAFT You bet.

PAO This is Mission Control Houston. At 2 days, 0 hours, 19 minutes, mission elapsed time. And some wishes come down from the Mission Planner Dick Truly the spaceship Challenger was about 75 nautical miles south of the city of Houston and 164 nautical miles above it. This is Mission Control Houston, the RMU Systems Officer reports that his data shows the payload latches have begun activated indicating that the PFTA will soon be freed from the payload bay. The RMU Systems Officer is responsible for the remote manipulator system, for mechanical systems and for upper stage systems during the mission. And in as much as the PFTA testing is aimed principally at testing the remote manipulator system he will be a prominent figure in this exercise. The RMU Systems Officer for the Orbit one team presently on duty in the Control Center is Albert (garble), he will be watching telemeter downlink data to monitor the

STS-8 AIR/GROUND TRANSCRIPT 6114j 244:06:45 9/1/83 PAGE 2

performance of the remote manipulator system throughout this test phase.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead CDR, this is Houston.

SPACECRAFT Okay all the retention latches are released, the times are 1 and 4 and 2 and 3 were between 2 and 22 and 24 seconds, the keel took 27 seconds. When we released the keel we got the ready to latches on 3, 4 and 5 went from grey to barberpole, it looks like the aft end popped out just a bit off the latches.

CAPCOM Roger we copy that.

PAO This is Mission Control Houston, mission elapsed time, 2 days, 0 hours, 25 minutes. Have almost constant ground station coverage during this testing with very small gaps in between as the flight path through the Challenger catches most of the ground stations in North America, in the South Atlantic, South Africa, Australia and South - -

END OF TAPE

PAO . . . small gaps inbetween as the flight path of the Challenger catches most of the ground stations in North America, in the South Atlantic, South Africa, Australia and South Pacific during these passes so we'll have a very good coverage, lots of data and probably a substantial amount of air-to-ground transmission. Challenger is in free drift at the moment indicating that there are no firings of the reaction control systems jets. There will be some induced firings later on in this testing to evaluate the interaction of the arm of that 8000 pound payload and the relationship of that mass to the Orbiter itself but for this early part of testing the vehicle will be in free drift.

CAPCOM Challenger, this is Houston, we are 30 seconds LOS, we'll talk to you in about 5 minutes through Dakar at 0 + 33.

SPACECRAFT Roger, see you there, we're about 5 inches out latches.

CAPCOM Copy that.

PAO This is Mission Control, Houston, Dick Truley advising that the PFTA is in the process of being unberthed nominal unberthing using that 6 degrees of freedom mode should take about 15 minutes duration, power up is about 10 minutes. Once it has been unberthed, the arm will be configured in a perpendicular posture relative to the vehicle. And there will be 30 minute test of interaction of the flight control system and the RMS using vernier reaction control systems jets. We're about 3 1/2 minutes away from reacquisition through Dakar, mission elapsed time is presently 2 days, 0 hours, 30 minutes, this is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you through Dakar for 11 minutes.

SPACECRAFT Okay, Mary, great timing, we're just on the top of page FF2-2 and we have a note written in here that says, let MCC know that we are here so they can send up some ASAP commands.

CAPCOM Okay, Dale, we copy that. And that's configured now, Dale.

SPACECRAFT Thank you.

CAPCOM Our pleasure.

SPACECRAFT And we are sitting up here with the PFTA at -600 inches of Z came right out of the guide, no problem at all, only had to make a few corrections other than just the Z input.

CAPCOM We copy that, sounds good.

STS-8 AIR/GROUND TRANSCRIPT t115j 244:06:57 9/01/83 PAGE 2

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, talk to you in about 4 minutes through Botswana at 00 + 48.

SPACECRAFT Okay, you probably saw we're at configuration A and just going to the top of page FF2-3.

CAPCOM We copy that, you're just chugging along.

PAO This is Shuttle Mission Control at 2 days, 0 hours, 44 minutes. We've had LOS, the PFTA exercise is a function that the Challenger crew does pretty much unilaterally and not a lot of interaction with the flight control team. So long as operations remain nominal, and there will be no need for a terrific lot of dialogue between the astronauts and the mission control team. And certainly to this point, the function - -

END OF TAPE

PAO And certainly to this point, the function of the, (garble) functions have been indeed nominal. We reacquire signal again in 3 minutes through Botswana, this is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you through Botswana for 7 minutes.

SPACECRAFT Roger, Mary, loud and clear, we're just completing step 1 on page 2-3.

CAPCOM Roger, Richard and you're loud and clear too, and we copy.

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, we'll talk to you again through Yarragadee in about 12 minutes at 1 + 08.

SPACECRAFT Okay, Mary.

CAPCOM Challenger, this is Houston with you through Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston, we are on the top of page 2-5 and we are talking about the DAP here for just a second.

CAPCOM We copy that.

PAO This is Mission Control, Houston at 2 days, 1 hour, 10 minutes mission elapsed time. The DAP question, Commander Dick Truley referred to, pertains of the digital auto pilot and the question may have something to do with some uncertainty as to the software configuration of that unit during the testing. Standing by to see whether the crew is going to need assistance from air-to-ground control team in sorting out that question or whether they will solve that onboard. We're over the ground station at Yarragadee, we get voice only through Yarragadee and no data to reflect the progress of the crew as they proceed through the checklist and the RMS PRCS interaction testing so we will have to rely on their vocal update as to how they are doing. This is Mission Control, Houston.

CAPCOM Challenger, this is Houston, we are 20 seconds LOS, talk to through Guam 1 + 22 in about 7 minutes.

SPACECRAFT Okay, we're in the 2 minute wait on page FS2-5.

CAPCOM Okay, Dale, we copy that.

PAO This is Shuttle Mission Control at 2 days, 1 hour, 16 minutes mission elapsed time. Mission Specialist, Dale Gardner referring the flight control team to their position and

STS-8 AIR/GROUND TRANSCRIPT t116j 244:07:17 09/01/83 PAGE 2

the checkout procedure of the documents they're using is from the flight data file. It's the PDRS operations checklist, the STS-8 flight supplement. They are on page FS2-5 having to do with the I-load sensitivity test where the digital auto pilot sends certain commands to fire selective verniers and do so at measured intervals of 5 seconds. The 2-minute wait that Dale Gardner reported is at the conclusion of that test where they are taking time to assure that any motion induced by those fires, firings is dampened out and that the vehicle remote manipulator system and the PFTA have ceased any motion that was induced by those - -

END OF TAPE

PAO - - it's dampened out that the vehicle remote manipulator system and the PFTA have ceased any motion that was induced by those RCS firings. The next test objective on completion of the I-load of the test will have to do with simulated deployment - let me amend that - that has to do with (garble) exposure facility. At the conclusion of this test actually the crew goes on to the noon meal. The testing of the PRCS is done principally by Dick Truly and Dale Gardner. As they're doing that, those activities pilot Dan Brandenstien is performing some vehicle maintenance activities and inputting keystrokes into the Orbiter's general purpose computers. Mission Specialist Guy Bluford has been doing some medical DSOs and performing meal preparation, which is scheduled to go on throughout the remainder of orbit 35 and up until mission elapsed time of 2 days and 3 hours at which time RMS testing resumes. That's according to the nominal timeline we would rather expect that the crew is going to be a little ahead of that. We'll acquire signal again through Guam in about 2 minutes. At mission elapsed time, 2 days, 1 hour, 20 minutes, this is Mission Control Houston.

CAPCOM Challenger this is Houston with you for just a couple of seconds through Guam.

SPACECRAFT Roger, Houston, we're on page 4-2, setting up.

CAPCOM Copy, 4-2.

SPACECRAFT (garble) turned off your (garble) I think if you want we've already put the wideband APCM into command.

CAPCOM We copy that. And Challenger this is Houston, no crew action required, but we're going to do some ground trouble shooting of camera delta over Hawaii. Looking at the data now we think that it's stuck lens problem.

SPACECRAFT Roger Houston, we hope you're right and just let us know if we can help.

CAPCOM Okay thanks, Richard. Challenger this is Houston we're 15 seconds LOS, talk to you again through Hawaii at 1 + 33.

SPACECRAFT Roger Houston, see you in Hawaii.

PAO This is Mission Control Houston, we'll get voice and data through Hawaii in 8 minutes. Mission Commander Dick Truly referencing their position in the PDRS checklist where they have preceeded on to RMS PRCS interaction testing that was scheduled for after the meal time, so it's clear that the crew is going to press on and move well ahead of the timeline as it appears in the crew activity plan. Suspicion of the INCO here is that the failed dalta camera may be a theral problem having to do

STS-8 AIR/GROUND TRANSCRIPT t117j 244:07:49 9/01/83 PAGE 2

with the lens while the ship was in the tail Sun attitude and suspects that they may be able to remedy that by some commands that he proposes to uplink to that system through Hawaii in the upcoming pass. Mission elapsed time 2 days, 1 hour, 26 minutes, this is Mission Control Houston.

END OF TAPE

PAO . . . do that by some commands that he proposes to uplink to that system through Hawaii during the upcoming pass. Mission elapse time, 2 days, 1 hour, 26 minutes, this is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you through Hawaii for 5 minutes.

SPACECRAFT Okay, we're just finishing up with test #1 on page 4-3.

CAPCOM We copy that, Dale. And Dan, this is Houston, with a comment on your ECLS redundant component checkout when you are ready.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, this is Houston, go ahead.

SPACECRAFT Roger, Mary, I got started a little late on that, I was just starting the redundant, EECO's redundant component checkout so give me your comments, please.

CAPCOM Okay, Dan, this is for after you do your checkout. Now that you are out of the cold attitude, we would like to go back to normal configuration so post that component checkout, we'd like you to go to L1 and check that the flow prop valve, loop 1 and 2 is interchange, and the talk backs in interchange.

SPACECRAFT Okay, understand. And after I'm done with this checkout be sure that loops 1 and 2 are interchanger.

CAPCOM That's firmative.

SPACECRAFT Okay, I'll press on with the checkout and make sure it ends up then.

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, we'll talk to you again through the states after a couple minutes at 1 + 43.

SPACECRAFT Roger, Mary, and we're setting up on page 4-4.

CAPCOM We copy that, Richard.

PAO This is Mission Control, Houston at 2 days, 1 hour, 42 minutes mission elapsed. We're about a minute away from reacquisition of signal and the INCO has reported no joy in his attempts to recover camera delta. Although he feels very strong that it's a lens problem and that it may be soluable and will continue to look for a remedy. We'll expect voice contact with

the Challenger again in just less than a minute.

CAPCOM Challenger, this is Houston with you over the states for 17 minutes. Challenger, this is Houston, you are broken and unreadable, say again.

SPACECRAFT (garble)

CAPCOM Challenger, Houston, negative for your, you're unreadable, stand by.

CAPCOM Challenger, this is Houston, Comm check.

CAPCOM Challenger, this is Houston, Comm check.

CAPCOM Challenger, this is Houston with a Comm check.

SPACECRAFT Houston, Challenger, how do you copy?

CAPCOM Challenger, this is Houston, Dale, we read you loud and clear. How me?

SPACECRAFT Okay, I'm on a HIU real quick, we just lost a battery on the WCCU we're using, we'll switch it out and be back with you in a second.

CAPCOM Roger that.

SPACECRAFT And Mary, we're in the first 2-minute pause of test 1 on 4-5.

CAPCOM Roger, Dale, we copy that.

SPACECRAFT And everything has been going nominally so far during some of these interaction tests. We've seen some movement, some wiggle of the PDRS PFTA combination but it hasn't been probably as large as I might have expected with the thing sticking up straight over the top of the cabin like it is.

CAPCOM Roger, we copy that, Dale.

SPACECRAFT And Mary, these 2-minute waits are almost as fun as they were in the simulator.

CAPCOM Roger Dale, we copy that.

SPACECRAFT Actually when we are in daylight, they are kind of nice because when ZLV, we look down at the earth through the overhead windows but on the dark side here, there is not much to see.

STS-8 AIR/GROUND TRANSCRIPT t118j 244:07:58 09/01/83 PAGE 3

CAPCOM Roger, it must be a little more realistic than the
sim, right?

END OF TAPE

CAPCOM Roger, it must be a little more realistic than the sim, right?

SPACECRAFT That's true.

SPACECRAFT Okay Mary, Comm check with the new WCCU battery, here.

CAPCOM And your Comm check is loud and clear.

SPACECRAFT Okay, that was the problem. We're back in business.

CAPCOM Well, that's good news.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead Challenger, Houston.

SPACECRAFT Roger, Mary, got done with the EECO's component checkout and everything looked good. The only thing that wasn't reasonably close to the book numbers was the cabin fan and delta P and there I had 5.8 with bravo and 5.92 with alpha. And I ended up with the (garble) valves in interchanger.

CAPCOM Roger Dan, we copy that, thanks.

CAPCOM Dan, this is Houston, all the UCLS component checkout looks good to us including the cabin fans. They look okay.

SPACECRAFT Okay, thank you.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead Richard, this is Houston.

SPACECRAFT Roger, just for time planning, what we're, Dan and I are planning on doing is completing the procedures on 4-5 which should put us a little bit ahead here and then we are going to take a short break and I'm going to go back to ZLV in verniers and we're going to get a bite to eat and then we'll get right back with it.

CAPCOM Roger, Richard, looks like you are right on schedule to us and your plans sound fine.

SPACECRAFT Okay, I just had a great ham and cheese sandwich but I had to eat in serial instead of in parallel. First the bread, then the ham, then the cheese.

CAPCOM We thought the bread came last.

SPACECRAFT It depends on what you have in your hand and when you start, I guess.

CAPCOM Yes sir.

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, we'll talk to you again through Ascension in 13 minutes at 2 + 13.

SPACECRAFT Okay, and we're on test 3 on 4-5.

CAPCOM Okay, Dale, we copy that.

PAO Mission Control, Houston. Ascension Island acquisition in a few seconds momentarily. The crew taking a meal break in the midst of the payload flight test article activities with the remote arm. We have acquisition at this time through Ascension.

CAPCOM Challenger, this is Houston with you through Ascension for 7 minutes.

SPACECRAFT Stand by for just one second.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead, Richard, Houston.

SPACECRAFT Okay, we are on page 4-5. We are in step 5, and just did the first tail up and there was a plus pitch. We repeated step 4 and the reason was when I fired the first pulse, I've been watching the RCS command lights and in addition to the low pulse that I got, a yaw jet also fired and we weren't sure if that would mess up the data for that test so we went ahead and tried the minus the second pulse after 2 minutes to kill the regs and then went around the little circle again and just repeated test 4 from the start. So we are in test 5 now on 4-5.

CAPCOM Roger, we copy that. You're moving right along.

SPACECRAFT Rog, and after test #6, we're going to be heading back to ZLV and take a little bit of a break.

CAPCOM Roger, another ham and cheese sandwich in serial.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t120j 244:08:47 9/01/83 PAGE 1

SPACECRAFT No not serial, we had that for breakfast.

CAPCOM Ouch!

SPACECRAFT (garble) (laughter).

CAPCOM Challenger this is Houston.

SPACECRAFT Okay Houston we just fired the first pulse on step 6.

CAPCOM Roger we copy Richard and we've seen an OMS crossfeed lines temperature decreasing and we suspect you're going to get an S89 thermal OMS message, and when you do, we'd like for you to go to A14 and take the RCS OMS heater crossfeed A auto and B off.

SPACECRAFT Wilco, will do. What time is it in Houston, Mary?

CAPCOM Richard it's almost 4 o'clock in the morning here and we're 40 seconds LOS. We'll talk to you again through Botswana at 2:23.

SPACECRAFT Okay, we'll see you at Botswana.

CAPCOM Challenger this is Houston, with you through Botswana for 8 minutes.

SPACECRAFT Loud and clear, Mary.

CAPCOM You too, Dale.

SPACECRAFT PLT, (garble) interaction test. And we're also taking a little break here and we're on our way back to -ZLV.

CAPCOM Roger we copy that.

SPACECRAFT Mary, I don't know if you've ever seen the, there's a great national geographic special about the dessert in (garble) and we're right over it.

CAPCOM Roger we copy that and it must be pretty spectacular. Challenger this is Houston, we're 30 seconds LOS we'll talk to you again through Guam in about 24 minutes at 2 + 55, and hope you're enjoying your lunch.

SPACECRAFT I hate to admit it, but we just, we weren't eating, we'll skip eating just from the view we got across South Africa and then the current just to the east of it.

PAO Mission Control Houston. Loss of signal at Botswana, the crew taking a little sightseeing break when they

STS-8 AIR/GROUND TRANSCRIPT t120j 244:08:47 9/01/83 PAGE 2

were scheduled to have their lunch. As they skimmed across the south part of Africa observing the sand dune ridges in Admibbia and also the very colored currents off shore. Next station is Guam in 22 minutes, the checkout of the RMS operations using the payload flight test article still has several more hours to run. For power down at roughly 7 hours into this date, some 5 hours from now. At 2 days, 2 hours, 33 minutes, this is Mission Control Houston.

PAO Mission Control Houston, acquisition through Guam upcoming, in fact we do have acquisition now.

CAPCOM Challenger, this is Houston with you through Guam for 8 minutes.

SPACECRAFT Roger, Houston, and we're on page 5-3 just waiting on step 4 to complete.

CAPCOM Roger we copy that. And Challenger, Houston, we'd like to remind you about the TV pass that's coming up in Hawaii which is your next site.

SPACECRAFT Thank you Houston.

CAPCOM Challenger this is Houston, we're 30 seconds LOS, we'll talk to you through Hawaii at 3 + 09, that's 6 minutes.

SPACECRAFT Okay, 3 + 09, we'll be set up.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t121j 244:09:28 9/1/83 PAGE 1

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, we'll talk to you through Hawaii at 3 plus 09, that's 6 minutes.

SPACECRAFT Okay, 3 plus 09, we'll be set up.

PAO This is Mission Control Houston, loss of signal at Guam. Reacquisition through Hawaii in 6 minutes. Continuing on across the states, Buckhorn and Merritt Island launch area station coverage for a television pass showing the remote manipulator system with the large dumbbell attached, with the payload flight test article returning in 5 minutes at Hawaii this is Mission Control Houston. Mission Control Houston, less than a minute away from reacquisition of Challenger through Hawaii, a brief dropout from Hawaii over to Goldstone. We have data through Hawaii at this time.

CAPCOM Challenger, Houston's with you at Hawaii for 7 and a half minutes.

SPACECRAFT Okay, we're with you and the TV's are on, I think we have the elbow cameras (garble) for you first, that might be a good view. And you, you, INCO can control any camera he wants except for B, we're using that one for data and flight deck cameras set up also.

CAPCOM Roger, we understand, Dale, thank you.

SPACECRAFT Tell us when you have a picture.

CAPCOM We have a picture right now Dale, we're looking at you through the overhead window, how are you doing?

SPACECRAFT Pretty good, John, how are you guys down there?

CAPCOM Really great.

SPACECRAFT This little walkie-talkie we have set up, we talk through this, and then we just listen through the speaker that's right here between Richard and myself.

CAPCOM Sounds like a good innovation.

SPACECRAFT Okay, and we're just getting ready to start test number 1 on 5-5.

CAPCOM Understand.

SPACECRAFT INCO if you want to see the PSTA just select the camera (garble), he's already aimed at it.

CAPCOM We have a nice view of the PSTA now, Dale, thanks for the suggestion.

STS-8 AIR/GROUND TRANSCRIPT t121j 244:09:28 9/1/83 PAGE 2

SPACECRAFT Roger. And you can look at D also just don't do any panning or tilting on it, its zoomed in on the end effector, to the wiggles when we put in these pulses.

CAPCOM Roger, we copy.

SPACECRAFT And John we're sorry this isn't a day side pass, this view is much prettier looking down at the Earth below it.

CAPCOM Roger, that.

SPACECRAFT Okay, if you just stay right on that camera B, Richard's going to put in the next pulse in about 10 or 15 seconds here.

CAPCOM Okay, we had it for a minute, right now we don't, now we're back with it, Dale.

SPACECRAFT Okay, here comes the pulse, stand by. It'll be a plus roll port wing down. There it is and I think you saw the picture move.

CAPCOM Roger, that, we saw it, Dale.

SPACECRAFT And John we are now watching our little egg timer which is counting down the 2 minutes in this test.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t122j 244:09:46 09/01/83 PAGE 1

SPACECRAFT And John, we are now watching our little egg timer here which is counting down to 2 min in this (garble).

CAPCOM Okay.

SPACECRAFT INCO is doing pretty good with those pan and tilts.

CAPCOM Challenger, Houston. We're about 50 sec to LOS now.

SPACECRAFT Okay.

CAPCOM Challenger, Houston. We're going LOS in 15 sec. We'll see you at Buckhorn in a couple of min.

SPACECRAFT Roger, John. See you then.

CAPCOM Challenger, Houston with you at Buckhorn for 6 min.

SPACECRAFT Roger, Houston.

CAPCOM And Challenger, Houston. Just for your information, your heaters are now working fine on your OMS crossfeed line, and we're having a little bit of difficulty focusing the camera C, so if you could focus camera C for us, we would appreciate it.

CAPCOM Challenger, Houston with you at Goldstone for 5-1/2 min.

SPACECRAFT - - all the way to infinity. The focus will drive in and out, but it won't get sharp at infinity.

CAPCOM Challenger, Houston with you at Goldstone for 5 min.

SPACECRAFT Roger, Houston. Loud and clear.

CAPCOM And Challenger, Houston. We're having a little difficulty focusing camera CHARLIE. If you could do that for us, we would appreciate it.

SPACECRAFT Well, as a matter of fact, we've had some trouble focusing it all the way into infinity - - in getting a sharp focus at infinity ourselves. Our focus will drive in and out, but it will not quite get there when you need to have it focused at infinity. We did, I don't know if you copied, we did get a camera overtemp on camera BRAVO. We've turned it off and are going to record the tests on camera CHARLIE and let camera BRAVO cool down. Maybe that's the problem. I don't know.

STS-8 AIR/GROUND TRANSCRIPT t122j 244:09:46 09/01/83 PAGE 2

CAPCOM Okay. We copy that, Richard, and just for your information, your OMS crossfeed heater line is now working properly.

SPACECRAFT Roger that.

CAPCOM And I have another note of information for you. You can assume no TDRS for the rest of the day. We'll only be working G-STADAN until we tell you otherwise, and unless the TDRS comes back, we won't be doing any of the interaction steps in the CAP.

SPACECRAFT Roger, John. Understand and just keep us advised. Thanks for telling us.

CAPCOM Roger that.

SPACECRAFT And Houston. We are complete with the LSS test. We're moving on to the auto sequencing now.

CAPCOM Roger that, Richard. Thanks a lot.

CAPCOM Challenger, Houston. If you could check that the flight deck camera is on, we would appreciate it so we can get a last view of you here before you go over the L.

SPACECRAFT Roger, Houston. It's on.

CAPCOM Thank you. And we're getting a good view of you here, Richard and Dale, doing your testing activity.

SPACECRAFT Okay. And we're on page 7-3. I'm just driving the shoulder yaw to minus 60 there in the middle of the page, in single.

CAPCOM Okay. We're following you, Dale. Thanks.

CAPCOM And we're going LOS here in about 30 sec. We'll see you at MILA in 3 min.

CAPCOM Challenger, Houston is with you at MILA for 3-1/2 min.

SPACECRAFT Roger John. Loud and clear.

PAO Mission Control, Houston in acquisition again through Merritt Island Launch Area. Bill getting television of

STS-8 AIR/GROUND TRANSCRIPT t122j 244:09:46 09/01/83 PAGE 3

the payload flight test article extended from the RMS, Remote Manipulator System. Offgoing Flight Director, Randy Stone will have his change-of-shift press conference in the building 2 news room at JSC at - -

END OF TAPE

PAO Offgoing Flight Director, Randy Stone, will have his change-of-shift press conference in the building 2 news room at JSC at 5:15 Central Daylight Time, approximately 13 min from now.

CAPCOM Challenger, Houston. We'll be going LOS here in 30 sec. We'll see you at Ascension at 3 plus 49.

SPACECRAFT Roger, Houston. See you there. We're still - - we're just about to start the auto sequencing.

PAO Mission Control. Houston. Loss of signal at Merritt Island Launch Area. Next station, Ascension Island, at approximately 15 min. During the Hawaii and stateside pass, we had live TV of the payload flight test article extended out on the Canadian built remote manipulator system, and Challenger has demonstrated that it can bench press 8500 lb without benefit of steroids. Flight Director, Randy Stone's press conference will be at 5:15 Central Daylight Time, some 9 min from now in the JSC briefing room. The crew currently is proceeding with the RMS, Remote Manipulator System, and Reaction Control System interaction tests in which the small attitude thrusters are fired while the arm is extended in various positions with the mass of the payload flight test article. Mission Control, Houston. Two days, 3 hr, 35 min elapsed time.

CAPCOM Challenger, Houston's with you at Ascension for 5-1/2 min.

SPACECRAFT Roger, John. Loud and clear. And Houston, CDR. We're on the way to .5 in the auto sequence on page 7-5.

CAPCOM Okay. We copy that, Richard. You guys are really moving along and doing a good job.

SPACECRAFT Well the RMS is doing a super job. We haven't had a hiccup yet out of it. Incidentally, we're recording this on camera ALPHA and we've got the other payload bay cameras off.

CAPCOM Okay. We copy.

SPACECRAFT Roger. John, it's a shame you haven't seen or heard more from Bill in the last couple of days, but I assure you, he's been working harder than anybody down there on his stuff in the middeck, and almost everybody that's absent from the conversation is down there helping him get measurements.

CAPCOM That's affirm, Dick.

SPACECRAFT I'm going to get him up here and gray tape him in a chair so he can look out the window a little bit.

STS-8 AIR/GROUND TRANSCRIPT t123j 244:10:02 9/1/83 Page 2

CAPCOM Roger. Sounds like a good idea.

CAPCOM Challenger, Houston. We're going LOS in 20 sec. We'll see you at Botswana in 5 min.

SPACECRAFT Okay, John. We just flew by .7 on the way to the last point, number 8.

CAPCOM Okay. Thanks a lot, Dale.

CAPCOM Challenger, Houston's with you at Botswana for 7 min.

SPACECRAFT Roger, John. Okay John, I've had some intermittent problem here with camera CHARLIE. We had it off there for a while while we used the ALPHA only. When I turned it back on, none of the ALC or (garble) buttons would response whatsoever. I cycled it off and back on, and now it appears to be working normally. Did the flight 7 guys have something similar to this?

CAPCOM Standby 1, Dale. I'll try to get you an answer.

SPACECRAFT Okay. Houston, CDR. You still with us?

CAPCOM Roger. Still with you.

SPACECRAFT Okay. Dale is setting up for the - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t124j 244:10:33 9/1/83 PAGE 1

SPACECRAFT Okay. Dale is setting up for the nominal berth.

CAPCOM Roger. We copy that.

CAPCOM Challenger, Houston. We're going LOS in 25 sec. We'll see you at Guam at 4 plus 31.

SPACECRAFT Roger, Houston.

PAO Mission Control, Houston. We have acquisition through Guam.

CAPCOM Challenger, Houston's with you at Guam for 7 min.

SPACECRAFT Roger, John. We did the nominal berth and we're letting it sit there while we return to -ZLV's since we're quite a bit ahead here.

CAPCOM Roger that, Dale.

SPACECRAFT And as you might have expected, the nominal berth was no problem at all. It took quite a bit less time than what we had programmed. They just walked right down in there.

CAPCOM Okay.

SPACECRAFT I did a ground test.

CAPCOM Challenger, Houston. Just for your information, we're going to try to acquire with TDRS again after Buckhorn. We think we have our ground station problem solved.

SPACECRAFT Roger.

CAPCOM Challenger, Houston. We're going LOS here in 25 sec. See you at Hawaii in 6 min.

SPACECRAFT Roger, Challenger. We'll see you at - - oops, excuse me, roger, Houston. We'll see you there.

SPACECRAFT A former CAPCOM.

CAPCOM Roger.

PAO Mission Control, Houston. About 40 sec away from reacquisition through Hawaii on orbit 36. There's some likelihood that the tracking satellite system may be up and running, and we may attempt to go on the TDRS satellite just at prior to loss of signal at Buckhorn, and Buckhorn has acquisition in about 10 min. The INCO has the system set up to where it will

STS-8 AIR/GROUND TRANSCRIPT t124j 244:10:33 9/1/83 PAGE 2

go back to the ground network at next, prior to next normal station acquisition in case its satellite does - - satellite system does fail again.

CAPCOM And Challenger, Houston. Just a reminder, after Buckhorn, we're going to be trying to acquire you again with TDRS, and don't go with any of the encruction steps in the CAP until we tell you to.

SPACECRAFT Roger that, John.

CAPCOM And Challenger, Houston. We're going LOS here in 45 sec. We are sending you a TAGS message of a length of 4 pages. We would a quality accessment of it please, when you have the opportunity, and if you could save it for postflight.

SPACECRAFT Okay. I understand. Four pages coming up on TAGS, look at the quality, and save them postflight. See you, John.

CAPCOM Roger. See you at Buckhorn in 3 min.

SPACECRAFT Okay.

PAO Mission Control, Houston. Loss of signal at Hawaii. Buckhorn reacquisition in about 2 min, and apparently we're now locked up on the forward link of the Ku-band with TDRS satellite, and 4 pages of the test are going to be sent up on the Text And Graphics System, or TAGS as it's called, so the crew can ckeck for quality of reproduct - -

END OF TAPE

PAO Four pages of the test are going to be sent up on the Text And Graphics System, or TAGS as it's called, so the crew can check for quality of reproduction in that system. Standing by for reacquisition through Buckhorn, final contact with the states - - ground stations for the day.

CAPCOM Challenger, Houston's with you at Buckhorn for 3 min.

SPACECRAFT Roger, John.

SPACECRAFT Houston, CDR. How do you hear me?

CAPCOM We're reading you loud and clear, Richard.

SPACECRAFT Okay. Loud and clear. Sorry to have been off COMM for awhile, but for (garble), we changed our COMM configuration and when I did, I began having problems with the C unit. Couldn't figure it out and I'm now on - - I'm sorry, the D unit, I'm now on HIU, so we can continue testing and I'll troubleshoot that another time.

CAPCOM You bet.

CAPCOM And Challenger, Houston. We're showing camera A at 44 deg right now. If you're not using it, you may power it off.

SPACECRAFT Roger. Thank you.

CAPCOM Challenger, Houston. We're going LOS in 20 sec. We'll see you with TDRS if it linked up; if not, Botswana, 5 plus 36.

SPACECRAFT Roger, and Dale is just out of the latches on the direct drive unberth.

CAPCOM Okay.

PAO Mission Control, Houston. We're getting now through the TDRS satellite on the Ku-band's circuit - - live television from Challenger. We now have S-band contact. We have voice through TDRS with the Challenger.

CAPCOM And Challenger, Houston - -

SPACECRAFT Did you just see sunrise on the TV, John?

CAPCOM Roger that, Richard.

SPACECRAFT John, I'm not sure which TV you're watching, but we're about 3 ft out -- Dale is about 3 feet out above the guides and going to move it up in preparation for the direct drive unberth.

CAPCOM Roger that, Richard, and we're looking at the CHARLIE camera, and it's just a beautiful definition that we have with the TDRS.

SPACECRAFT Super. That's great. Dale is using a MUX camera down around the trunnions and the elbow camera to watch the close trunnion, and we've got the flight deck camera back on also, so if you want Dan to tilt them, you're welcome to switch in between any of them. The only two cameras we have off are ALPHA and DELTA.

CAPCOM We copy that, Richard.

SPACECRAFT Houston, MSI.

CAPCOM Roger, Dale. Go.

SPACECRAFT Okay, John. We have the PFTA sitting, oh, I don't know, 10 or 12 ft above the longerons. I just did the direct drive unberth. I don't think it took, what, maybe 10 min maximum, probably even less than that. It flew very well in direct. Some oscillation using certain joints, but it was very easy to let those DAP out and keep going, amazingly enough that it flew not too much different than the MG OPS.

CAPCOM Okay. We copy that, and just clarify for us that it's your intention to continue on with the control system eval.

SPACECRAFT That's affirmative. We're going on to the control system evaluation now.

CAPCOM Ten-four.

SPACECRAFT Roger that, John. I mispoke and said in direct berth first.

CAPCOM Yes sir.

CAPCOM -- Challenger.

SPACECRAFT Okiedoke. See you there.

END OF TAPE

SPACECRAFT Houston, Challenger.

CAPCOM Roger, Challenger, Houston.

SPACECRAFT Yes, did INCO just send up some TV commands per chance?

CAPCOM Stand by 1 Dale. We'll wait for INCO. And Dale, we have done nothing other than select cameras for downlink.

SPACECRAFT Okay, one of my monitors just did something funny. It went blank and then went over to a MUX picture, and then went blank and then came back to my, to my selection and I just didn't know what was causing it.

CAPCOM Understand and Dale a correction on my last comment. We think likely we did cause your problem because we selected MUX.

SPACECRAFT Okay, no problem just wanted to make sure it wasn't something onboard.

CAPCOM Roger, we won't do that again.

SPACECRAFT And Houston, CDR. The, we just completed or we're waiting for the time to run out at the end of test 4 on page 3-3 and the flight deck camera is on.

CAPCOM Roger, we understand Richard. Thanks a lot. And we're getting a good picture of you all on the flight deck right now Richard.

SPACECRAFT You have the lights - the lighting may not be optimum. John here. We got the Sun coming in through some of our overhead and aft windows so...

CAPCOM Roger, we understand Dale, but its actually coming, looking pretty good.

SPACECRAFT And Houston we're on page flight supplement 3-4 - OCS'ing to that IC.

CAPCOM Okay, and we're following you Dale.

SPACECRAFT And RMU has probably noticed sometimes these OCS's take forever to finish. They're so close it's not worth waiting, and when that happens we just go ahead and put the brakes on and continue on with the test.

CAPCOM We copy that, Dale.

END OF TAPE

SPACECRAFT The OCS's take forever to finish. They're so close, it's not worth waiting and when that happens, we just go ahead and put the brakes on and continue on with the test.

CAPCOM We copy that, Dale.

SPACECRAFT This is Challenger. The HRM was activated the first time at 2 days, 5 hr, and 28 min.

CAPCOM Roger. We copy.

CAPCOM Houston, we've cornered the doctor on the flight deck.

CAPCOM Roger. We copy that, with the doctor on the flight deck.

CAPCOM And we have an excellent picture here of the doctor on the flight deck, Richard.

SPACECRAFT Doc's super. I figured you'll thought he was lost, but he's still here. Yeah, you better save it. It's the only one in existence.

CAPCOM You really look good, Bill.

SPACECRAFT And, you might notice that Bill is still in the same clothes that he wore for launch.

CAPCOM Roger. We saw that, and we're still standing by for whenever you want to send it to us, Bill, the summary and the times of your activities today.

SPACECRAFT Roger, Houston. He's still busy, but he'll be putting it together later on this afternoon and giving it to you.

CAPCOM We understand.

SPACECRAFT And Houston, for your info, we're seeing, oh, some slight oscillations at the end of each of these control systems evals, but it seems to DAP out fairly nicely.

CAPCOM We copy, Dale.

SPACECRAFT And we're just returning to the IC at the end of step 2 on page 3-5.

CAPCOM Roger. Thanks.

SPACECRAFT Houston, CDR. Are you still with us?

CAPCOM Roger. We are, Richard. UHF, Botswana

SPACECRAFT Okay.

SPACECRAFT But that's where you're talking from, John. I thought we just took a picture of your transmitter.

CAPCOM Roger that, Dan.

CAPCOM Challenger, Houston. We are going to lose you here in 20 sec. We will see you at IOS in about another minute and a half.

SPACECRAFT Roger.

CAPCOM Challenger, Houston's with you at IOS for 7 min.

SPACECRAFT Okay, John, we're all clear and we're just starting test number 4 on 3-5.

CAPCOM Okay, and we're following you.

SPACECRAFT Okay, Houston, we're on page 3-6, doing that operator command and the PFTA is heading on over the starboard wing, just like our little picture at the bottom of the page.

CAPCOM Roger. We are looking at it with you, Dale.

CAPCOM Challenger, Houston. Did you call?

SPACECRAFT Roger. We just looked in the text mailbox, and we got a - - we have three sheets of paper in there. One is marked 1 of 4, which is a standard test pattern. One is marked 2 of 4, which is a summary CAP page. looks like. Then we've got a blank sheet of paper, and no forth sheet of paper. (Garble). The quality on the first two is excellent (garble).

CAPCOM Okay. Thank you for the report. We'll retransmit those again at a later time. We're going LOS here in 15 sec. See you at Guam at 6 plus 09.

SPACECRAFT Roger, Houston, and if you crankup any more television today, we'll show you the picture of these TAGS messages, and you can see that the quality is excellent.

CAPCOM Roger that, Richard.

PAO Mission Control, Houston. Loss of signal at Indian Ocean Station on the tailend of orbit 36, and we're 15 min from reacquisition at Guam. The TDRS satellite system apparently worked throughout most of that pass from LOS at Buckhorn and all the way over to where the spacecraft goes over - -

END OF TAPE

PAO worked throughout most of that pass from LOS at Buckhorn and all the way over to where the spacecraft goes over the hill from the line of sight from TDRS. Had good solid television on the Ku-band, and good S-band communications and data. We'll return at Guam acquisition, and at day 2, 5 hr, 55 min, this is Mission Control, Houston.

PAO Mission Control, Houston. We have acquisition through Guam at this time.

CAPCOM Challenger, Houston's with you at Guam for 5 min.

SPACECRAFT Roger, Houston. Loud and clear.

SPACECRAFT Houston, we're on page 3-9. Right in the middle of the page which is single draft, back to the IC.

CAPCOM Okay. We see that, Richard. Thanks a lot.

SPACECRAFT You bet.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, Houston. Go.

SPACECRAFT Yeah, John, we just did the direct shoulder pitch drive test on the bottom of 3-9, and the guys that do the computer analysis were pretty close. For the first 10 sec of holding in the direct command, the arm didn't move, and then it slowly picked up a its rate during the remaining 20 sec of the drive.

CAPCOM Roger. Copy, for the first 10 sec, it didn't move, Dale, then it picked up the rate.

SPACECRAFT That's affirmative. Not perceptively, anyway.

CAPCOM Roger.

CAPCOM We're 30 sec to LOS. We'll see you at Hawaii in 7 min.

SPACECRAFT Roger, John. We'll see you at Hawaii, and Dale's on 3-10.

CAPCOM Okay, and thanks for the update.

PAO Mission Control, Houston. LOS, Guam. Hawaii in 6 min on orbit 37. Test still underway of the interaction between the Orbiter and the Payload Flight Test Article, (PFTA) out on the end of the 50 ft remote arm. At 2 days, 6 hr, 13 min - - 15 min, this is Mission Control, Houston.

PAO Mission Control, Houston. Acquisition through Hawaii at this time. Anticipating reacquisition also through the TDRS satellite, either near or at Hawaii loss of signal.

CAPCOM - - Houston's with you at Hawaii for 8 min.

SPACECRAFT Roger, Houston. (Garble)

CAPCOM Okay, Richard, I'm barely reading you. There's a loud squeal in the background.

SPACECRAFT John, how do you copy on this one?

CAPCOM Reading you loud and clear, Dale.

SPACECRAFT Okay.

SPACECRAFT Okay, John. First an update. We're on FS10-2, ocassing to the above first position. Also, to continue our camera loads here, it appears we've lost partial film on camera CHARLIE. We can zoom it all the way in, but when we zoom out, it stops at about half way, it appears to us, and we tried it several times, and it won't zoom out past that point.

CAPCOM Roger. We copy that, Dale, and, Dale, we recommend you check that your payload ID is number 2.

SPACECRAFT Okay. Actually, it doesn't matter here. I'm going back in in direct, so I wasn't worried about it, John.

CAPCOM Roger. I copy.

SPACECRAFT But we'll be happy to switch it for you.

END OF TAPE

CAPCOM Roger, I copy.

SPACECRAFT Well, we'll be happy to switch it for you.

SPACECRAFT (Garble)

CAPCOM Richard, if you were trying to transmit again we had a loud squeal in the background again as you transmitted.

CAPCOM Challenger, Houston. We are going to be going LOS here at Hawaii in 45 seconds. I'd like you to take the encryption select switch on ALL to T slant R and we are going to be trying to pick up TDRS. If we lose you on this pass, we'll see you at Santiago at 6 plus 50.

SPACECRAFT Roger, John.

PAO This is Mission Control, Houston. Loss of signal through Hawaii on orbit 37. The activities with the Payload Flight Test Article and the RMS system are continuing with the direct drive berthing. We're starting to get TDRS S-band at this time so we should have OS shortly.

CAPCOM Challenger, Houston's with you at TDRS. How do you read?

SPACECRAFT Okay, we have you, John.

SPACECRAFT And we're on the direct --I'm sorry I cut you off. We're on the direct berthing. We're about 2 feet above the (garble) coming down. Slowly.

CAPCOM Okay. We copy and we read you loud and clear.

CAPCOM Challenger, Houston. We would like you to go back on ALL and put the encryption mode switch to ALL please.

CAPCOM Challenger, Houston. Did you copy?

SPACECRAFT Houston, Challenger. How do you read?

CAPCOM Roger. Reading you loud and clear, Dan. We would like you to go back on ALL and put the encryption mode switch to ALL.

SPACECRAFT Roger, Houston. We heard you all the times and it's been done.

CAPCOM Okay. Thanks, Dan. It's just part of the test we're trying to run.

STS-8 AIR/GROUND TRANSCRIPT t129j 244:12:55 09/01/83 PAGE 2

CAPCOM Challenger, Houston. We currently like the data on stars 13 and 26. You can go ahead and torque them.

CAPCOM And if you do that, that will suffice for your evening IMU alignment. We won't have to do one later.

SPACECRAFT Houston, how do you read the CDR?

CAPCOM Roger. Loud and clear, Richard.

SPACECRAFT (Garble) We've made several radio checks and the first transmission we've heard....

CAPCOM And Challenger, Houston. If you hear, we had lost contact with TDRS for awhile. That was why we were not responding likely, but now we seem to have good comm again. How do you read?

SPACECRAFT Read you loud and clear, now. So say again about the IMU's and anything else you need to tell us about.

CAPCOM Roger, Richard. We have a good lockup on the stars 13 and 26 right now, and we would like you to go ahead torque them; and if we do this successfully, this will suffice for our IMU align this evening.

SPACECRAFT Roger, understand.

CAPCOM And Challenger, Houston. If you could just confirm for us that you put the encryption mode to the ALL position and that you're back out of it now.

SPACECRAFT Okay.

END OF TAPE

SPACECRAFT Roger. I understand.

CAPCOM And Challenger, Houston, if you could just confirm for us that you put the encryption mode to the all position, and that you're back out of it now.

SPACECRAFT Okay. I put it in the all, and I have left it in all since I had't heard from you since. Do you want it back in select?

CAPCOM Standby one, Richard.

SPACECRAFT And Houston, I'm not sure - -

CAPCOM And Challenger, Houston, we would like you to put the - - return the mode switch to select now.

SPACECRAFT Wilco.

CAPCOM And Richard, did you ask anything else there in the last couple of minutes. We were dropping in and out with contact.

SPACECRAFT Negative, and I have taken the 2 STAR trackers to (garble).

CAPCOM Okay, I copy that. And Richard, just for some clarification, you did the right thing with leaving that in the all position all that time, and it was to wait for a voice call before you put it back to select as you did.

CAPCOM Challenger, Houston. We would like you to go to the track mode.

SPACECRAFT Roger. Houston, CDR. Are you reading me?

CAPCOM Roger. Loud and clear, Richard.

SPACECRAFT Houston, CDR. Do you need me to read you the torquing angles on the IMU's.

CAPCOM Negative. We got that, Richard. Thank you.

SPACECRAFT (Garble), depending on the situation. Do you want me to go ahead and just try to close with the brakes on?

CAPCOM Challenger, Houston. Standby.

CAPCOM Challenger, Houston. How do you read us now?

SPACECRAFT Reading you loud and clear.

STS-8 AIR/GROUND TRANSCRIPT t130j 244:13:25 09/01/83 PAGE 2

CAPCOM Dale, we lost you for a minute. You can go ahead and latch with the brakes on.

SPACECRAFT Roger. Understand, we're cleared to latch with the brakes on and with a 4 ready to latches.

CAPCOM Roger. Good readback, Richard.

CAPCOM Challenger, Houston. After the latch, we would like you to go ahead and take the brakes off, and then go to the test mode before end effector release.

SPACECRAFT Roger, John. Understand. Brakes off and then test mode before end effector release, and we've got latches 1, 2, 3 and 4 latched.

CAPCOM Roger. We copy, Richard, and after the end effector release, then go on back to the normal procedures on 10-4.

SPACECRAFT Roger, standby.

CAPCOM Challenger, Houston. We're going LOS here for 1 min. We'll see you at Indian Ocean.

CAPCOM Roger. Challenger, Houston with you at Indian Ocean for 7 min, and we'd like you to get the encryption select switch back to bypass, please.

SPACECRAFT Okay. Back to bypass. And Houston, CDR. How do you read us?

CAPCOM Roger. We're reading you loud and clear now, Richard.

SPACECRAFT Roger, John. During that last pass, I'm not sure, we heard you make your LOS call and for about 5 min prior to that, I had called several times and did not get a response - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t131j 244:13:53 9/01/83 PAGE 1

SPACECRAFT Roger, John. During that last pass, I'm not sure, we heard you make your LOS call and for about 5 min prior to that, I had called several times and did not get a response, and thought we were LOS.

CAPCOM Understand. There could have been some problems, Richard, with the handover from TDRS to the Botswana STDN.

SPACECRAFT Roger. No problem. I just wanted you to be aware of it, and the PFTA is latched. We're doing the nominal berth.

CAPCOM We understand.

SPACECRAFT We're doing the RMS powerdown, which is a nominal berth.

CAPCOM Roger. We understand, Richard.

CAPCOM And Challenger, Houston, if you would, if you could check whether or not you have the TAGS message T-24, entitled Proposed CAP Update, onboard.

SPACECRAFT Standby one. Houston, CDR. We did get messages TANGO-24, 2 pages, proposed flight pages 5 and 6. Is that what you were referring to?

CAPCOM Roger that, Richard, and we're going to be going LOS here in 30 sec, but if you could look at it at Guam, we'd like to talk about where we could potentially place TV 04. We currently are thinking, maybe, REV 69 and 81.

SPACECRAFT (garble)

CAPCOM Roger, and we'll see you at Guam.

SPACECRAFT (Garble)

CAPCOM We concur. Looks good.

PAO This is Mission Control, Houston. Loss of signal at Indian Ocean station, at the onset of orbit number 38. Guam, 19 min away. Meanwhile, the INSAT tracking station, or ground operations in India confirm that INSAT 1B first apogee kick motor burn was ontime this morning at 7:46 Central Daylight Time, Thursday, with a burn time of 25 min, 42 sec. The second burn will be Friday morning at 9:39 Central, one day earlier than planned. We have no numbers on the current orbit for INSAT. As those come in, we'll pass them along. Repeat again, the first of two apogee kick motor burns was run successfully, on time by the Indian government ground station. Next acquisition of Challenger will be at Guam in some 18 min at day 2, 7 hr, 30 min, Mission Control, Houston.

PAO Mission Control, Houston. We have acquisition through Guam, orbit 38.

CAPCOM Challenger, Houston's with you through Guam for a minute. How copy?

SPACECRAFT Loud and clear. How me?

CAPCOM We've got you loud and clear, Richard.

SPACECRAFT Roger. You were a little - - going over the hill, I understand you wanted me to take a look at this rough end of the mission summary and comment on the placement of TV 04. Is that correct?

CAPCOM That's affirm, Richard.

SPACECRAFT Rog. I think your plan is a great one.

CAPCOM Okay. I guess 69 looks good to you.

SPACECRAFT Yeah. I'm sorry we couldn't have done it when it was originally scheduled, but it just wouldn't have been appropriate, I don't think, under the circumstances, REV 69 looks good to us.

CAPCOM Okay, Richard. We'll proceed with REV 69, then.

SPACECRAFT And, Fish. One question I did have is, at some point, we'd like to know how long the pass is, and if it's on TDRS, if we might like it to be a little bit longer than the normal 7 or 8 min that are scheduled for STADN's.

CAPCOM Right now, it's scheduled for Hawaii, Richard, but we'll get the details on that and get back with you.

SPACECRAFT (garble)

END OF TAPE

SPACECRAFT Okiedoke. No problem, and I appreciate you sending it up. I do have one question. Are we going to shift-over from the teleprinter to the TAGS for paper communications from here on?

CAPCOM Roger, Richard. If TDRS Ku stays up, we'll plan to do that shortly. We're about 30 sec LOS now, and we'll see you at Hawaii at 7 plus 57.

SPACECRAFT Okay. We'll see you then.

PAO Mission Control, Houston. Loss of signal at Guam. Next station, Hawaii in 8 min, at 2 days, 7 hr, 49 min, Mission Control, Houston.

PAO Mission Control, Houston. Acquisition at Hawaii.

CAPCOM Challenger, Houston with you through Hawaii for 7 min.

SPACECRAFT Roger, Houston. Loud and clear.

CAPCOM Roger, and just a note for you, Richard, and for the rest of the crew. INSAT had a successful AKM burn this morning, and I have another question for you when you guys have a minute.

SPACECRAFT Sure. Go ahead.

CAPCOM Roger. On STS-2, Richard, when you had a chance to first use the arm, you didn't really have a payload on it. Wonder if you could comment on any differences you might have noticed between the way the arm behaved on STS-2 and on the PFTA exercises you've just completed.

SPACECRAFT One of the things that we were going to do later on this evening was to have Dale kind of give a qualitative debrief of his flying today. He did it all and I assisted him. I guess my memory would be best - - my comments would be valid only, I guess, in the unloaded mode, and frankly, I don't recall the arm being quite as lightly (garble) as I've seen it in the unloaded mode, and I did not remember the elbow operating, as I asked yesterday, unloaded, and that is when you command an elbow in a positive direction, occasionally it moves, and then slows down, and moves again. The arm, however, all day today was operating very smoothly. I'll leave it to Dale to describe the dynamics to you, but boy, it sure is a fine piece of machinery, and it worked like a champ today.

CAPCOM Roger. That's good to hear, and we'll stand by for Dale's comments at his convenience.

SPACECRAFT Okay. It won't be this pass because we need to talk about it a little bit, but sometime later on this evening. How long is your team on, Fish?

CAPCOM Richard, we're on about another 3 hr.

SPACECRAFT Oh, okay. Well, we'll certainly get to - - Dale and I will talk and I'll get him to do that before long, and also, sometime later on this evening, Bill Thornton is planning on giving you another medical measurement summary, and if there's anything else we need to talk about, just let us know and we'll be glad to.

CAPCOM Roger. We copy that, and we'll look forward to Bill's observations.

SPACECRAFT You bet. Houston, MS3.

CAPCOM Roger. Go ahead.

SPACECRAFT Yes, Fish, why don't we run through, since I didn't give you one yesterday, (garble). I think I gave all the times that were needed for the data. In addition, we did tape dump all the monitoring that had been previously done, did physicals, heights, leg plethysmography, residual acuities, five sets of eye/hand - -

END OF TAPE

SPACECRAFT I dumped all the monitoring that had been previously done, did physicals, heights, legs plethysmography, physical acuities, five sets of eye/hand coordinations, air samples were taken, the animals were monitored, and the last piece of downlink data that they have to worry about is 01, that's day 1, 11 hr, and 36 min.

SPACECRAFT (Garble), we've got additional leg plethysmography, additional heights, I did Wendy Angelo's biofeedback - - the first one this afternoon. We've done threshold audiometry. We've done audiometric evoke potentials, did the ophthalmoscopy, and ran into a couple of problems. We've had to make some repairs to our little refrigerator, and then had to abort the linear threshold sensitivity this afternoon because we've apparently lost the onboard graphic recorder, the direct write-in recorder, and I'll fall back and pick that up. In addition, we've checked out a number of other items which we will be using tomorrow, the VOR turntable and gyroscopes, and some items such as that. Then there are a whole rash of details that I've been doing. Do you have any questions or comments?

CAPCOM No questions, Bill. That about covers it. Sounds like you've gathered enough data to keep you busy for at least two or three weeks after you get back.

SPACECRAFT I expect so. Fish, I would appreciate your telling Tom Moore, and Fred Sproush, and some of the people like that, what a fine job they did on getting this hardware together, and I sure appreciate the meticulous attention to detail. It pays off in flight.

CAPCOM Roger that, Bill. We'll be sure they get the message.. One other thing for the crew, I've got a short flight note for you here when you're ready.

SPACECRAFT Roger. Who was that for, Fish?

CAPCOM Oh, whoever's close to it, Richard. We see indications that the WMS gate valve did not fully seat after the last use. We would just like you to cycle that valve.

SPACECRAFT Okay. We'll check it.

CAPCOM Roger.

SPACECRAFT Fish, this is MS3 again. I also forgot to say that the fluid study samples are being routinely collected.

CAPCOM Roger, Bill. We copy that.

STS-8 AIR/GROUND TRANSCRIPT t133j 244:14:33 9/1/83 PAGE 2

SPACECRAFT And Houston, CDR. The last user of the gate valve is heading back to check it, and just to let you know the system is working as designed.

CAPCOM Roger. We copy, Richard. We're 25 sec LOS. We'll try and pick you up shortly afterward on TDRS. If not, it will be Santiago at 8 plus 24.

END OF TAPE

PAO Mission Control, Houston. Loss of signal at Hawaii. Now attempting to lock up on the S-band and Ku-band uplinks to the TDRS satellite. We're starting to get to the low bit rate of telemetry now out of TDRS, through TDRS.

CAPCOM Challenger, Houston with you on TDRS. How copy?

SPACECRAFT Loud and clear, Houston.

CAPCOM Roger, we've got you loud and clear, Richard.

SPACECRAFT And Fish, it's MS1. I've got a few minutes now, would you like to have that RMS summary?

CAPCOM Roger, we're ready. Go ahead, Dale.

SPACECRAFT Okay, the first thing that Richard and I want to pass on is a crew note to all the folks that worked on the checklist. You guys probably saw from your own data, we started essentially right on time to the minute, and we finished 1 minute and 30 seconds prior to what the checklist said which I think was 2 days, 7 hours and 30 minutes. The flow through the checklist went very well. We made a couple of little mistakes which you helped us correct, but we expected that with the long flow that we had. The performance of the arm was excellent. With the PFTA on there in both the auto and the manual augmented modes, movement was very smooth. There was probably some dynamics there, but it was practically unnoticeable once you started flying it around and got the feel of it. In signal in direct, it was a little bit different. The dynamics were very noticeable especially in direct. Large observations occurred after fairly large inputs. I guess the direct berthing would be the best way to describe that. The dynamics were, suprisingly enough, very much similar to the MDF. We put in a, when you put in a shoulder pitch or an elbow pitch down, you'd have to sit and wait sometimes maybe 15, 20, 30 seconds to let the oscillation stop to see what you had gained and then decide on your next move. The hardest part of the direct berth was that it is in the MDF. Once your down in the vicinity of the ready to latch switches it becomes very confusing because you'll get one or two ready to latches. Then they will trip out and you'll get a couple more, and you end up having to go down in, come back out, and go down in making multiple attempts to try to get all the roll and pitch errors out and finally get the 4 ready to latches. We told you what happened on several occasions when we got 4 ready to latches. I then take the brakes off and the PFTA would visibly rise up out of the guides an inch or two and we'd loose the ready to latches. And we did as you suggested and with the brakes on just went ahead and latched. That worked perfectly okay. And then we left the arm post-latch in the PFTA in. That's about all I can think of. If you have any more questions, I'll be glad to answer them.

STS-8 AIR/GROUND TRANSCRIPT t134j 244:14:39 09/01/83 PAGE 2

CAPCOM Roger, Dale. We'll look around the room here and see if any questions develop. I guess you guys have another chance tomorrow to come closer to finishing on time instead of a minute and a half early.

SPACECRAFT Hey, Fish. Adding one more to our list of camera lows, we've had some sort of problem with the elbow camera also. Richard and I can't really tell what it is. It doesn't appear to want to focus, focus or zoom properly. You can get a picture in there that's somewhat usable, but it's blurry and it's hard for us to tell if it's just a focus problem. It almost looks like the camera somehow looked at the sun or something, and it's just not quite operating properly now. We'll try to look at it again tomorrow and describe it better.

CAPCOM Roger, Dale, we copy.

SPACECRAFT One additional clue on the elbow camera. It may be that it has been on for some period of time. However, we had not been...

END OF TAPE

SPACECRAFT - - we'll try to look at it again tomorrow and describe it better.

CAPCOM Roger, Dale. We copy.

SPACECRAFT One additional clue on the elbow camera may be that it had been on for some period of time; however, we had not been using it and when it came time to select it and use it again - - when I first tried to focus it, I actually thought I was looking at some kind of a weird VTR playback or something because there were large bright and dark images on it and it looked like they were - - it looked like it was looking at a bright object, and then very close to that, something like a wavy cable or something was in front of the lens. It was very unfocused; however, I was able to eyeball directly at the camera, and that obviously was not the case, so I pointed it down in the payload bay where there were no lights, and it improved somewhat, however, as Dale said, we were never able again to get a sharp focus on it.

CAPCOM Roger, Richard. We'll see if we can find some answers to that and get back with you.

SPACECRAFT Okay. Dale asked me to mention to you that he did try camera DELTA again later in the day after it had warmed up with no further success.

CAPCOM Roger. We copy, Richard. Camera DELTA still down.

SPACECRAFT Roger that.

SPACECRAFT Fish, for your info, I started an extra HRM at 8 plus 10 plus 30 just to give them a little extra data?

CAPCOM Roger, Dan. Eight plus 10 plus 30.

CAPCOM Challenger, Houston. Some followup on you RMS comments.

SPACECRAFT Standby.

SPACECRAFT Fish, Dale is listening. He and Thornton are doing something. Go ahead.

CAPCOM Roger. Number 1, could you comment on the end effector motion that occurred on payload release.

SPACECRAFT Standby. Hey, Fish, I think it would be more convenient if we just put off your questions to Dale for about another 5 or 10 min, or so.

STS-8 AIR/GROUND TRANSCRIPT t135j 244:14:45 9/1/83 PAGE 2

CAPCOM Roger. Just one other reminder for tomorrow's activities. We'd like you to latch the keel pin first.

SPACECRAFT Rog. We caught that mistake in the middle of making it, and I meant to mention it to you and didn't. Sorry about that.

SPACECRAFT And Houston, MSI. I'm free of Doctor Thornton now. Could you give me those questions again.

CAPCOM Roger, Dale. There was just one. We wondered if you could comment on any end effector motion that might have occurred on payload release.

SPACECRAFT Oh, well as soon as I got the open talkback, I just pulled back on the THC, and looking at the monitor and, or the wrist camera and looking at the motions through the B camera, we saw nothing, no sideways or up and down motion whatsoever. It appeared to have come off the grapple fixture completely unloaded and just moved straight back away.

CAPCOM Roger, Dale. We copy, and that was all we had from down here.

SPACECRAFT Okay.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t136j 244:14:59 9/1/83 PAGE 1

CAPCOM Challenger, Houston for UHF at Ascension. How copy?

SPACECRAFT Go ahead Houston.

CAPCOM Roger, Dan. We're UHF at Ascension for a couple of minutes. Just wanted to know how you copied us.

SPACECRAFT Copied it loud and clear.

CAPCOM Challenger, Houston, just to let you know, the WMS gate valve appears to be fully seated now.

SPACECRAFT Outstanding.

CAPCOM And Challenger, Houston, we're 30 sec LOS. See you at Indian Ocean in 12 min.

CAPCOM Challenger, Houston with you through Indian Ocean for 5 min.

SPACECRAFT Roger, Houston. Loud and clear.

CAPCOM Roger, Richard. A question for you. Earlier you commented that you'd had some difficulty with your D unit, your DELTA unit. We'd like to know down here if you could tell us a little bit about what that trouble was?

END OF TAPE

SPACECRAFT OK. I'm using the D unit now, and we used it, and I'm using it in the walkie-talkie mode. That is, that we have its wall unit plugged into the station that works with the flight deck speaker and I'm transmitting to it with the handheld unit. We used it in this mode overnight and for several hours this morning, and then when we got to the RMS testing that required us to put, or asked us to put voice on the VTR, it turned out to be more convenient for - - or required actually, for Dale and I to go, actually, on headsets. At that time, I took the D unit off the - - away from the configuration that I was in, and put it, and tried to use it myself, and I could get nothing but static when it was separated from the speaker mike, so, I put it up, didn't have time to troubleshoot it, and so tonight, rather than troubleshoot it, we decided to try to use it in the original configuration, which is what you're listening to now, and it's working fine, and I tried a new battery. That didn't help. I tried a different, very lightweight, headset with it and that wasn't the problem, so, that's all I know about it. I'm using it now.

CAPCOM Roger. We copy.

SPACECRAFT And, Houston, do you have instructions on the supply water dump this evening. We were thinking if you did, we'd get started with it so if we had a similar problem, as we did last night, we could get on it a little earlier.

CAPCOM Roger, Richard. Are you ready to copy?

SPACECRAFT You bet.

CAPCOM OK. There are three actions on your presleep activities. The first one will be, we want you to dump water tank BRAVO to 25 percent. And secondly, for your cabin repress, we'd like to use N2; therefore, we'd like you to go to MO 10W and take the 14.7 cabin REG inlet system 1 valve to open, and you'll plan on closing this presleep.

SPACECRAFT Okay. We copy. Dump supply water to 25 percent and open 14.7 cabin REG number 1 until we go to sleep.

CAPCOM Roger, Dan. You'll open it now and close it presleep and there'll be no cryo heater reconfiguration required tonight.

SPACECRAFT Roger. No cryo heater reconfig required. Thank you.

CAPCOM And Challenger, Houston, we'd like to know also if you received the TAGS message number 13, all four copies. We sent it up a second time.

STS-8 AIR/GROUND TRANSCRIPT t137j 244:15:25 9/1/83 PAGE 2

SPACECRAFT Standby. We'll check. Fish, we, in the TAGS, we just checked, we have five blank pages, and one excellent page of the test pattern.

CAPCOM Roger, Richard. We'll try that again tonight. We have nothing more for you, if you folks want to go ahead and go to bed, you've had a superb day. Really stayed on the timeline and everything's looking good down here. We don't plan on calling you, but you can call us at Guam, 9 plus 22. Have a good night.

SPACECRAFT Okay. Feel free to call us in the next couple passes if you have anything because we'll be here, and we're preparing supper now. Like to pass on to your team what a great support job you did. You made it very easy today. Are the, I do have one question. We had a question for the Earth OPS people if they're working today or tonight, or whatever time it is.

CAPCOM We're going LOS, Richard. You can go ahead and call it down next pass at Guam, 9 plus 22.

PAO Mission Control, Houston. Loss of signal at Indian Ocean Station following one TDRS satellite pass that sort of in and out - -

END OF TAPE

SPACECRAFT (Garble)

PAO Mission Control, Houston. Loss of Signal at Indian Ocean Station following 1 TDRS satellite pass that sort of in and out of lock during part of that time. The Challenger crew was given a go for sleep one orbit early, if they so chose. They, apparently, are preparing their evening meal after a fairly busy day of extensive exercise of the Remote Manipulator Arm and the Payload Flight Test Article. Next station, Guam, in approximately 18 min. This is Mission Control, day 2, 9 hr, 4 min.

PAO Mission Control, Houston. We have acquisition through Guam.

CAPCOM Challenger, Houston with you through Guam for 3 min.

SPACECRAFT Roger Houston. How do you read?

CAPCOM Got you loud and clear, Richard. Just want to let you know your state vector is go for the next PLS on REV 49, and your TIG would be 3 days, 1 hr, 11 min, 32 sec.

SPACECRAFT Roger, and Dan had one question. At the end of the supply water dump, how about the cabin vent isolation valve, do you want him to go ahead and close it? (Garble) supply water dump.

CAPCOM Negative, Richard. We'd like him to leave it open.

SPACECRAFT Okay. Leave the vent isolation valve open.

CAPCOM That's affirmative. Leave the vent isolation valve open.

SPACECRAFT Okay.

SPACECRAFT (Garble)

CAPCOM Roger.

SPACECRAFT Standby. Houston, CDR.

CAPCOM Roger, Richard. Go ahead.

SPACECRAFT Roger. The question that we were going to pass along to those observation folks was, in north central Australia, inland, I guess, perhaps 50 mi or so, is a large field of fault lines that are criss-crossed that, I would guess, are many, many square miles in area. All the faults are parallel to each other along each line, except that two lines of faults almost looks

STS-8 AIR/GROUND TRANSCRIPT t138j 244:15:35 9/01/83 PAGE 2

like somebody took a stick and just drew straight lines in the sand and then 90 deg, or maybe 70 deg to that, drew another straight line across. I wonder if you could ask if we could have the identification of that site, or that feature. And (garble) during this pass. We can get it tomorrow.

CAPCOM Roger. We'll get to work on it and get back with you as soon as we have a good answer.

SPACECRAFT Okay.

CAPCOM Challenger, Houston. We are 40 sec LOS. We have a short pass coming up at Hawaii in 9 plus 36. If we have an answer to your Earth OBS question, we'll give it to you then. In the meantime, you might check your fault summary page.

PAO Mission Control, Houston. Acquisition through Hawaii.

PAO Mission Control, Houston. Loss of signal through Hawaii. No verbal contact with the crew, in the midst of their evening meal, evening for them, on the red eye special, as it's being called in some circles. Next station, on the hour, will be at Ascension. The crew had a go for sleep about one orbit early, as compared to the original timeline. At 2 days, 9 hr, 41 min, Mission Control, Houston.

END OF TAPE

PAO - - at 2 days, 9 hr, 41 min, Mission Control, Houston.

CAPCOM Challenger, Houston. Go ahead.

CAPCOM Challenger, Houston. Go ahead.

CAPCOM Challenger, Houston. Go ahead.

CAPCOM Challenger, Houston. Go ahead.

SPACECRAFT How do you copy Challenger?

CAPCOM Dale, we've got you loud and clear.

SPACECRAFT Okay. Was the go ahead that you gave me for the antenna repositioning?

CAPCOM Negative. We heard you call us, and I was just responding to that call.

SPACECRAFT Okay. What I was asking was, if you want us to do a Ku-Band antenna cable repositioning this evening?

CAPCOM Roger, Dale. We're go for that now if you're ready.

SPACECRAFT (garble)

SPACECRAFT And, Houston, I'm sorry. You cut out. We didn't catch the answer.

CAPCOM Roger, Dale. We were just telling you that you could go ahead and do that cable changeout if you wanted to.

SPACECRAFT Okay. I just wondered because, see, we have Ku signal strength. I didn't want to mess up a test or something.

CAPCOM Negative, Dale. There's no problem. You can go ahead when you're ready.

SPACECRAFT Okay. We'll do it real quick and get it overwith.

PAO Mission Control, Houston. Acquisition through Ascension Island in 30 sec, probably the final call of the day. Spacecraft cleaned up and straightened up for sleep period. Just a few more housekeeping chores with the different systems configuration, a few points to be passed up here by the CAPCOM on this pass. Otherwise, they're go for sleep.

CAPCOM Challenger, Houston at Ascension for 8 min.

CAPCOM Challenger, Houston.

CAPCOM Challenger, Houston.

CAPCOM Challenger, Houston. UHF over Ascension. How
copy?

CAPCOM Challenger, Houston. How copy?

CAPCOM Challenger, Houston.

CAPCOM Challenger, Houston.

CAPCOM Challenger, Houston.

SPACECRAFT Houston.

CAPCOM Roger. How copy, Challenger?

END OF TAPE

PAO This is Mission Control Houston, going out of the possible TDRS AOS line to the east, next possible contact will be through Guam in approximately 24 minutes. Crew entering their sleep period at this time, earlier in this orbit the crew inquired about a patch of northern Australia in which their crisscrossed fault lines, many thousands of acres of fault lines running east and west and north and south. And they inquired about the name given this geological feature with all its fault lines and Bill CAPCOM, Dr. Bill Fisher response was that they should check their fault summary display. Shades of wallish rough. At 2 days, 10 hours, 34 minutes, Mission Control Houston.

PAO Mission Control Houston. Challenger about to pass within range of the Ascension Island tracking station, we're not expecting any communication with the crew at this time. We have some indications they have been powering down their CRTs for sleep. They did that some time ago and we're not expecting to talk to them on this pass, should be into their sleep period. Our change of shift press conference due to begin in about 10 minutes, with the Offgoing Flight Director Harold Draughon. 2 days, 11 hours, 49 minutes, mission elapsed time, this is Mission Control Houston.

PAO Mission Control Houston, we're about a minute away from passing over the Guam station, we expect to have data down from the spacecraft at that time. 2 days, 12 hours, 32 minutes mission elapsed time, this is Mission Control Houston.

PAO Mission Control Houston, 2 days, 12 hours, 43 minutes mission elapsed time. On that pass just completed over the Guam tracking station we received data from the spacecraft and all systems continue to look good at this time. This is Mission Control.

PAO Mission Control Houston, 2 days, 12 hours, 58 minutes MET. Challenger out over the South Pacific at this time on orbit number 41 and we are getting data through the tracking data relay satellite system. This is Mission Control.

PAO Mission Control Houston, 2 days, 15 hours, 10 minutes MET. Challenger passing over the Dakar tracking station on orbit number 43, data coming down from the spacecraft at the present time and everything looks good onboard the spacecraft. We'll be switching of use of the TDRS about a minute from the Dakar LOS, in about a minute and a half from now. We have had some use of the tracking data relay satellite on the previous orbit and got data from Challenger during that time and also uplinked some of the teleprinter message that they have been preparing over night for the crew's morning reading pleasure. This is Mission control Houston.

END OF TAPE

PAO Mission Control Houston, 2 hours 16 hours 5 minutes mission elapsed time, Challenger has just passed within the range of the tracking data relay satellite within the western limits of that range. And we are receiving data through the TDRS at this time. Systems onboard the Challenger continue to look good. The crew has about 2 and a half hours remaining in their scheduled sleep period. This is Mission Control Houston. Mission Control Houston, 2 days 16 hours 46 minutes mission elapsed time. Challenger on orbit number 44 is passing over the Dakar tracking station and data coming down from the spacecraft appears good. All systems onboard the Challenger look good at this time. The crew still have about an hour and 45 minutes in their scheduled sleep period. We have already uplinked some of the teleprinter messages this evening that have been prepared on the planning team and the rest of them will be going up about the time of crew wakeup over the next Dakar pass. We've periodically had use of the TDRS satellite during the evening for data, some occasionally reoccurring difficulties through the White Sands station have prevented the continuous use of that satellite but from time to time we have had it available. This is Mission Control Houston. This is Mission Control Houston, at 2 days 17 hours 47 minutes mission elapsed time, Challenger on the last leg of orbit number 44 over the South Pacific is now within range of the tracking relay data satellite and we are making use of that satellite at the present time. Data is coming down from the TDRS or through the TDRS from the spacecraft and we will be uplinking some messages to the crew for them to have to read as they get up in about 40 minutes or so. We have no indication from the data that the crew is awake yet, so we're assuming they're still getting their rest and probably would not hear from them until at the earliest I suppose the Indian Ocean station in about 50 minutes. This is Mission Control Houston. This is Mission Control Houston, 2 days 17 hours 50 minutes mission elapsed time. We'd like to make the announcement at this time that we are planning to cancel the change-of-shift press conference that would normally have been held about 9:30 this evening for the off-going planning team flight director Jay Greene. Been very little activity in mission control this evening other than the preparation of the teleprinter messages, minor adjustments to tomorrow's flight plan and we see no reason to hold a press conference. This is a tentative cancellation, we'll make another announcement in about 30 minutes for the firm cancellation of that press conference. This is Mission Control.

(Wake up music)

CAPCOM Good morning, Challenger.

SPACECRAFT Good morning, Houston, really enjoyed that Nitney fight song.

STS-8 AIR/GROUND TRANSCRIPT t141j 244:44:00 9/1/83 PAGE 2

CAPCOM Yes, that's a real rouser, it work us up down here too.

SPACECRAFT Think you played the right one at the right time.

CAPCOM Well, Guy, we've got about 4 minutes on this pass at Dakar, and we'd like to pass a couple of notes to you if you can copy.

SPACECRAFT Okay, stand by just one second. Okay, Bryan, shoot.

CAPCOM Okay sir, first just a reminder, perform the manual cabin atmosphere management per Orbit Ops Checklist, page 5-10, dump the water tank bravo to 10 percent, should take about 30 minutes and early this morning we tried out the TAGS, we consider TAGS to be in a experimental mode right now, we're not ready to transition 100 percent over to TAGS and whenever you can this morning we'd like you to tell us 1, did it wake anybody up and 2, what message numbers did you get from the TAGS over.

SPACECRAFT Okay, that noise doesn't seem to be a problem - -

END OF TAPE

SPACECRAFT Okay. The noise doesn't seem to be a problem, have or whatever I received in the TAGS this morning just a couple of minutes ago, was 17 blank pages, so there's something amiss somewhere, so I'd suggest we keep trying and we'll keep reporting to you what we have.

CAPCOM Roger.

SPACECRAFT In general, the pages we have gotten, Bryan, have been either excellent or blank and I have saved them and sometime today if you'd like to see them on the, you know, on the TV I'll be glad to show them to you, but we've had a number of blank pages.

CAPCOM Okay. Challenger, Houston, we have less than a minute to LOS, we'll be transitioning the TDRS and we'll give you a call when we're up TDRS.

SPACECRAFT Roger Bryan, we'll see you there.

PAO Mission Control Houston, 2 days, 18 hours, 24 minutes mission elapsed time. Heard from the crew the first time this morning over the just completed Dakar pass and the ground played up the Penn State fight Song, Guy Bluford's Alma Mater, he thanked them for that on the air-to-ground. Commander Dick Truly reported that they received 17 blank pages on text and - -

CAPCOM Challenger, Houston, with you on TDRS.

SPACECRAFT Roger, Houston, you're loud, a tiny bit of an echo.

CAPCOM Roger, you're loud with a echo as well.

SPACECRAFT Okay.

PAO We have acquisition through the tracking data relay satellite for voice at this time.

SPACECRAFT Houston, everybody is up and about and cleaning up and we'll be preparing breakfast in a little bit. One of the things we're planning on working in this morning is a good look at the various filters, there's a slight buildup in the air, either small lint particules and so forth, and so we're going to have a good filter cleaning this morning and we'll let you know how it goes.

PAO This is Mission Control, as we were reporting earlier Dick Truly noted that he got 17 blank pages on the text and graphic system. That's a new system going up this time to provide a hardcopy that operates via telemetry, it ultimately would be a replacement for the old teleprinter and they can

STS-8 AIR/GROUND TRANSCRIPT t142j 245:00:53 9/2/83 PAGE 2

transmit not only text but also maps and photographs and other similar type materials.

PAO That system is in an experimental phase right now, since we're just flying that and they had some very good luck with it in the last couple of days and this morning they apparently didn't have quite such good luck. We were getting some communication there, as soon as we left Dakar through the tracking data relay satellite although there was quite a strong echo in both the voice coming down from the spacecraft and as Dick Truly reported communications with Mission Control here going up to the spacecraft. We may hear from them again shortly as we're still in communication range of the tracking data relay satellite and then we pass over the Indian Ocean station. This is Mission Control.

CAPCOM Challenger, Houston, we're going LOS in the next few seconds we'll see you at Indian Ocean at 18:38.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t143j 245:01:11 9/2/83 PAGE 1

CAPCOM Challenger, Houston, we're going LOS in the next few seconds, we'll see you at Indian Ocean at 18 38.

PAO Mission Control Houston, standing by for acquisition through Indian Ocean station.

CAPCOM Challenger, Houston, standing by Indian Ocean for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear the Sun is just about to come here shortly. I wanted to pass on to you how well your teleprinter messages so far have been in the mornings, they're all clear, easy to read and easy to incorporate and better yet you're giving us time to do that so, it really is working well and I certainly appreciate it.

CAPCOM Roger, thanks for the words, Dick, and I'll pass that on to the FAOs.

SPACECRAFT Well they sure deserve a hand for the kind of work that they have been doing so far at least and as far as visually during the night, we had a couple of spectacular night passes with the cockpit lights out over Africa and the Middle East and Nile River Valley and up at Iseral and Jordan and all the way across Saudia Arabia and on down to India, it's really pretty.

CAPCOM Well I we wish we cou'd see the same view.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Roger, on the water dump termination, do you want to leave the supply water dump isol valve open and when you answer this, answer it possibly for the rest of the flight and then I won't ask you everytime I dump water.

CAPCOM And Challenger, Houston. Dan, the answer to that is we're going to keep that valve open until entry day.

SPACECRAFT Okay, fine. Thanks a lot.

SPACECRAFT Houston, CDR, on IMU alignment this morning I'm assuming you want to do the roll startrack align as printed, is that correct?

CAPCOM Roger, Richard, that's affirmative, and we're going LOS, we'll see you over Yarragadee at 18 plus 54.

SPACECRAFT Super, see you there.

PAO Mission Control Houston, 2 days 18 hours 46 minutes mission elapsed time, we have loss of signal through Indian Ocean station. Crew going through their morning routine, preparing for the alignment of the inertial measurement units, housekeeping sort of a thing that they do to help the Orbiter avionics know where the spacecraft is. We are announcing that the scheduled change of shift press conference with the off-going flight director Jay Greene for the planning team regularly scheduled for 9:30 p.m. this evening has been cancelled. There's been no problems servicing during the night, the activity centered around routine preparation of the teleprinter messages and updates of crew activity plans for this flight day. Repeating that press conference with the off-going flight director scheduled for 9:30 central time has been cancelled. This is Mission Control Houston. Mission Control Houston, standing by for acquisition through Yarragadee.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Roger, I was getting ready to do the Ku-band antenna cabling positioning thought I'd check with you, make sure it's not going to louse up any of your tests or anything.

CAPCOM Stand by. Challenger, Houston. Dan, you're clear to press on with the Ku-band antenna cabling positioning, and we've got you for another 7 minutes here at Yarragadee. Challenger, Houston, did you copy my last.

SPACECRAFT Roger, Houston, we copied and it's in work.

CAPCOM Okay.

SPACECRAFT Houston, we got your message about the weather system over Australia and we're going to try and get a few cloud photos, luckily the northwest part of Australia has been essentially cloud free here in the last few days, absolutely unbelievable, unbelievable to look at the mountains.

CAPCOM Okay, Richard. We're looking forward to seeing those pictures.

END OF TAPE

CAPCOM Okay, Richard. We're looking forward to seeing those pictures. Challenger, Houston, we lost you for about 30 seconds there going from Yarragadee to Orroral, we're back with you now for 5 minutes.

SPACECRAFT Roger, we're still looking down at Australia.

CAPCOM Roger. Challenger, Houston, got a question for you on the TAGS if you can handle that?

SPACECRAFT Roger, go ahead.

CAPCOM We've looked at the TAGS down here and we can't figure out if - that there's anything we did to cause the pages to be blank and when you've got a chance sometime this morning, we'd appreciate it if you'd check your brightness, gamma and contrast controls, see if they're all set to normal up there and report any deviations to us.

SPACECRAFT Okay we'll sure do it. When the mission started I did check them and they were, if I remember right, they were the little rotories were straight up but at any rate whatever they were it was per the, the way that little picture in the checklist showed. We'll check them again this morning.

CAPCOM Roger.

SPACECRAFT Let's see, Guy just went down and the three rotory controls are all normal, they're at 12 o'clock.

CAPCOM Roger, thank you.

SPACECRAFT This is CDR, we're (garble) and some terrific glitter patterns out here.

CAPCOM That's great Richard, we're about to go LOS and we'll see you at 19:17 with TDRS.

SPACECRAFT See you then.

PAO Mission Control Houston, 2 days, 19 hours, 8 minutes mission elapsed time. Challenger passing out of the range of the Orroral tracking station, eastern Australia, last quarter of orbit number 45. We'll pick up again in about 9 minutes through the tracking data relay satellite assuming it's up and operational. Flight Controllers asked the crew to check the configuration of the switches on their text and graphics system in that last pass. Much of the information that they were sending up as part of the testing of that system did not get through this morning, some had got through earlier, but the last several pages did not come through the system properly and they asked them to look and see if the switches were are all in the

right place on that system. One of the first things the crew will get into this morning after their postsleep activity which includes meals and all that sort of thing, is to maneuver the Orbiter to its attitude for the orbital maneuvering system burn, there'll be 2 of those OMS engine burns to lower the Challenger's orbit bringing it down from about 160 nautical mile orbit down to about a 120. That will be done in two stages, the purpose of that is to facilitate conducting of an experiment on the interaction of oxygen molecules with materials, there are some materials carried in get-away special cannister in the payload bay and those will be exposed to space. The Orbiter will point its payload bay doors, the open doors along the velocity vector or the flight path of the Shuttle and at that altitude they will be ramming those few oxygen molecules that are there into the open cargo bay and part of that test is to see how the oxygen erodes those materials in the cargo bay there, set up for that experimental purpose. We'll be picking up with the tracking data relay satellite in about 6 1/2 minutes, this is Mission Control Houston.

CAPCOM Challenger, Houston, with you on TDRS for 50 minutes.

SPACECRAFT Roger, Houston.

CAPCOM And we have you loud and clear, and we're standing by.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT 1145j 245:01:52 9/2/83 PAGE 1

CAPCOM Challenger, Houston, with you on TDRS for 50 minutes.

SPACECRAFT Roger, Houston.

CAPCOM And we have you loud and clear and we're standing by.

SPACECRAFT And Houston, CDR, wonder if I could, while it's fresh on Dan's and my mind, I wonder if I could pass on some vis ops info for you.

CAPCOM Roger, we're ready to copy.

SPACECRAFT Okay, just as we went feet wet off the east Australia coast, we entered, we saw a bunch of ocean glitter and it ended up on 3 different cassettes and different, I had one cassette with 100 mm lens that I got a couple of shots off and ran out of film on that cassette and we put some more on a different camera that happened to have a 50 mm lens on it which we had on there for the weather and then by that time we got a new cassette on the one with the 100 mm and finished it there so the patterns on those 3 which I think were numbered 36, 37, or 8, and 39, something like all go together.

CAPCOM Okay, that sounds great, Richard. I think Bob Stephenson will be real happy with that.

SPACECRAFT Yes. We're going to try to make today, glitter day.

CAPCOM Okay.

CAPCOM And Challenger, Houston, we lost voice there for about 30 seconds. We're back with you.

SPACECRAFT Roger, thanks.

CAPCOM Challenger, Houston, we just sent a test message up on the TAGS when you got a chance you might want to check the test message in the TAGS.

SPACECRAFT Houston, have you just said something about a test message on TAGS, you're very broken there, we didn't copy.

CAPCOM Roger, we just sent a test message up on the TAGS, you might want to check when you got a chance.

SPACECRAFT Okay, Dale is doing it right now.

SPACECRAFT Yes, Houston, Challenger.

STS-8 AIR/GROUND TRANSCRIPT t145j 245:01:52 9/2/83 PAGE 2

PAO This is Shuttle Control, 2 days, 19 hours, 25 minutes mission elapsed time. We're experiencing intermittent lock on the downlink on TDRS.

CAPCOM Challenger, Houston, we're back with you throughout the S-band TDRS and the orbit one team is here with you, good morning.

PAO This is Shuttle Control, 2 days, 19 hours, 32 minutes mission elapsed time. Handover in the mission control operation's room has been completed. There will be no change-of-shift news briefing. On-coming Flight Director is Randy Stone.

CAPCOM Voice check.

PAO Capcom's are - -

SPACECRAFT Roger, Houston, reading you loud and clear.

CAPCOM Okay, we've been sort of slipping in and out of lock. I hope we'll hold you for awhile. Orbit one team is taking off and we'd all like to wish you a good morning. And Dan, the last time when we lost lock, you had just started to say something to Bryan and got cut out.

SPACECRAFT Oh, we were, huh?

CAPCOM Yes, it's been about 5 minutes since we've heard anything from you, so I don't know what you were trying to say then or if you want to try to go through it again.

SPACECRAFT Last thing I can recall we were talking about the TAGS test message that you folks sent. And it was a blank piece of paper.

CAPCOM Okay, we'll let the people know.

SPACECRAFT How's the weather in Houston today? Tonight.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t146j 245:02:06 9/2/83 PAGE 1

CAPCOM Stevenson will be real happy with that.

SPACECRAFT How's the weather in Houston today, tonight?

CAPCOM Somebody's going to look out the window.

SPACECRAFT You're going to have to cut a hole in the roof, that's the second time we've asked and you guys haven't had the answer.

CAPCOM Well they told us always to ask for an out the window report, right, before you come in.

SPACECRAFT Roger.

CAPCOM No basically, when we came in this evening it was pretty nice outside, had a nice sunset and was reasonably clear.

SPACECRAFT That's good. You'll be happy to hear we haven't had any rain up here the whole mission. That is except when Gardner forgets to put the needle down on the water dispenser.

CAPCOM Some things just don't require any, any comments do they?

PAO This is Shuttle Control, CAPCOM's on the Orbiter 1 team are Jeff Hoffman and Mary Cleave.

CAPCOM Challenger, we're dropping TDRS momentarily, we'll be back with you in a minute or so through Mila.

SPACECRAFT Roger, Houston, we're just getting ready - -

PAO This is Shuttle Control, 2 days 19 hours 38 minutes, Challenger is on orbit 46, about to be acquired through the Merritt Island, Florida tracking station.

CAPCOM Challenger, Houston's with you through Mila for about 12 minutes.

SPACECRAFT Roger, Houston, you're loud and clear. Houston, CDR.

CAPCOM Go ahead, Dick.

SPACECRAFT Hey, Jeff, do you have a better TIG time for the first OMS burn or is the one printed in the CAP at about 21, printed in the CAP on page 4-15 the one we're going to use.

CAPCOM Stand by I'll ask FIDO. Dick, days hour minutes are as in the CAP, the seconds will be 27.8, 2 days 21 hours 56 minutes 27.8 seconds will be the OMS burn TIG.

SPACECRAFT Roger, Jeff, thanks a lot, appreciate it, I'll set up a camera count down to that so we can just keep (garble) up here, thanks. Houston, CDR. We're trying your cameras delta (garble) we'll let you know how it comes out.

CAPCOM Okay, we'll cross our fingers for you. Challenger, we're going LOS, 20 seconds, be out of touch for a few minutes and then catch you through Dakar.

SPACECRAFT Okay, see you at Dakar.

PAO This is Shuttle Control, Bemuda has loss of signal, Dakar is next in just over 3 minutes. Challenger Commander Dick Truly reported during this pass that the troubleshooting activities are underway now on camera delta. The forward starboard television camera in the payload bay which has failed, he said he would report the outcome of that troubleshooting as soon as it was completed. We'll stand by for acquisition through Dakar at 2 days 19 hours 52 minutes mission elapsed time.

CAPCOM Challenger, Houston with you through Dakar, 6 minutes.

SPACECRAFT Roger, Houston, and we've got one star, star 45 in the table.

CAPCOM Okay, star 45 in the table and I have a message for you on the CIRC pumps.

SPACECRAFT Okay, go ahead.

CAPCOM The CIRC pumps have been operating for the past 12 hours and the accumulator pressure has remained stable. It may be that the leak has stopped, anyway we would like to check that so here's what we'd like you to do. On panel R2 could you turn OFF hydraulic circulation pumps 1 and 3. Then we'll watch the accumulator pressure for a while. If the accumulator pressure should decay, in either system below 1930 psi and that's the FDA limit and on R2 turn the affected CIRC pump back ON. That's to ON for 5 minutes. And after that turn hydraulic CIRC pumps 1 and

END OF TAPE

CAPCOM On R2, turn the affected circ pump back on, that's to ON, for 5 minutes and after that turn hydraulic circ pumps 1 and 3 to the GCP position, and that will return us to the current configuration of the 5-minute on and 60-minute off duty cycles.

SPACECRAFT Roger, understand. Houston, CDR, got a question on the IMU align procedure, the way I read it, it says between 25 and 30 minutes after start, which is where we are now, to go back to A-auto vern, whether we're in verniers or in the normal jets and we're presently heads up and on the verniers. Is that, do you still want me to go back to auto?

CAPCOM Stand by, Dick.

SPACECRAFT Okay and we just got another star on the table, star 37 with an angle error of .01.

CAPCOM Okay. That was star 37, angle error .01.

SPACECRAFT And Houston, MS1, I've got a quite CCTV camera report here for you if you want it.

CAPCOM Okay, Dale.

SPACECRAFT Okay, I think Dick already mentioned we tried your trick on camera delta, no joy. I think you're right about the iris being closed. I put it up on the one monitor and then put another color camera on another monitor and closed its iris manually and the two pictures look exactly the same, so I think the delta is closed, stuck closed. I just tried the elbow camera, it seems to be working better now, I'm able to focus properly and it looks like it's back in business. Camera Charlie, I, cycled in - zoomed in and out several times and finally it looked like it broke free and I'm now able to zoom in, out all the way, so it looks like at least temporarily it's back in business also.

CAPCOM Okay, so to recap the video situation then, camera delta is still out and you believe the iris is stuck closed. The elbow camera you are able to get a better focus with it today and camera Charlie now is free and zoomed.

SPACECRAFT Apparently so.

CAPCOM Okay, well, be thankful for little things I guess.

SPACECRAFT Yes, one out's better than 3 out.

CAPCOM Sure, any day.

SPACECRAFT It was starting to get right interesting yesterday, it was the direct berth when those cameras started to go.

CAPCOM It just makes you work a little harder. We're going LOS - -

SPACECRAFT Hey Jeff, there is one thing that you might pass on to the team that does the RMS stuff this afternoon. I forgot to mention to them from yesterday, the first, right after we'd done the direct berth and had it down and had four ready to latches and the checklist called then for us to take the brakes off and go into test mode for the, for latching it up. When I took the brake switch to off, I got an RMS master alarm with no caution light with - on the RMS panel, of course, I through the brakes right back on, I think we had a message PDRS control, you might look back at the data and see, by the time we got to spec 96 though there were no indications of any problem and thereafter each time that we took the brake switch from on to off, that problem did not occur so we had some kind of transient there and I really don't know what it was.

CAPCOM Okay, I guess the RMS people can think about that and we'll let you know if they come up with anything. Another message now on your dancer question on the DAP it.

SPACECRAFT Go ahead.

CAPCOM You can go to auto on the DAP and that should take you around continuing the roll until you get to LVLH.

SPACECRAFT Richard says, roger. Hey Jeff, did you guys send up some more TAG messages?

CAPCOM Stand by, I'm checking on that. Challenger, we tried to send you another - -

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead. Go ahead, Challenger. Challenger, Houston, voice check.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t148j 245:02:35 09/02/83 PAGE 1

CAPCOM Go ahead. Go ahead, Challenger. Challenger, Houston, voice check.

SPACECRAFT Houston, Challenger.

CAPCOM Okay, it looks like we had a short dropout there, how do you read?

SPACECRAFT Jeff, I read you loud and clear. Did you guys send up some TAG messages not too long ago?

CAPCOM Yes, about a little over 5 minutes ago, we sent up another TAG test message, did you receive it.

SPACECRAFT Have 3 blank sheets of paper.

CAPCOM Well if you guys need any extra paper, you've got it now.

SPACECRAFT Yes, I have to agree on that.

CAPCOM Challenger, Houston, we're going to continue periodically to attempt to send up TAGS messages so just keep checking down there every once in a while and maybe we'll get something after a while.

SPACECRAFT Okiedoke, we'll do it.

PAO This is Shuttle Control at 2 days 20 hours 6 minutes mission elapsed time. To recap the television camera troubleshooting efforts, Dale Gardner reported no joy on camera delta, he believes the iris is stuck closed on that camera. Two other cameras that had problems were reported working properly now, the RMS elbow camera is now focusing properly and Gardner was able to zoom payload bay camera charlie. There was a zoom problem with that camera earlier though, those two cameras charlie and the elbow camera now working properly. Camera D still failed. Approaching LOS on the TDRS, Indian Ocean will be available for Challenger shortly thereafter, we'll stand by for further communications. At 2 days 20 hours 7 minutes mission elapsed time this is Shuttle Control Houston.

CAPCOM Challenger, Houston. We're going to lose TDRS in about 30 seconds, pick you up at IOS at 20 plus 13, we'll be sending you up the targets for the OMS burn and a new state vector. Challenger, Houston, with you through IOS for 9 minutes.

SPACECRAFT Roger, Houston, loud and clear. And sorry we missed answering your LOS call, I heard it but we were all down below changing LioH and trying to, the treadmill is been makes a good bit of noise as you walk on it and we were jury rigging a way to to kind of damp it out.

CAPCOM Okay, so you know about the stuff coming up then.

SPACECRAFT Yes, actually the noise is made because the, the door to the LiOH compartment is a tad loose and between that and the, and the foot connection between the treadmill and the door just kind of make it rattle around a bit as we were fixing that up.

CAPCOM Okay. Dick, we see two good stars in your table, 37 and 16 and you're okay if you want to go into align using those two stars.

SPACECRAFT Okay, I'll sure do it and I see we're back in ZLV so I'll go back to DAP A1 right after I getting the align started.

CAPCOM Okay.

SPACECRAFT Houston, CDR the align is in progress and I'm assuming GNC does not need the numbers but if he does I've got them.

CAPCOM We're watching it down here so we do not need them, thanks.

SPACECRAFT Okay.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t149j 245:02:50 9/02/83 PAGE 1

CAPCOM Challenger, Houston, 30 seconds LOS, talk to you at Yarragadee at 2, at 20 + 29.

SPACECRAFT Roger, see you there.

PAO This is Shuttle Control, the Indian Ocean station has loss of signal. Challenger will be acquired through Yarragadee in 6 minutes, 10 seconds. At 2 days, 20 hours, 23 minutes mission elapsed time this is Mission Control Houston.

PAO This is Shuttle Control, at 2 days, 20 hours, 29 minutes, mission elapsed time. Challenger is about 15 seconds away from acquisition through Yarragadee.

CAPCOM Challenger, Houston, with you through Yarragadee, 9 minutes and we have some OMS pads for you.

SPACECRAFT Roger, Houston, got you loud and clear. Stand by for a second we're ready to copy the pad.

CAPCOM Okay, I've got 2 pads for you so get out 2 sheets.

SPACECRAFT Okay, we will. Okay, Houston, cut her loose.

CAP OM Okay, I'll give you the recirc, that's OMS 4, here we go, OMS both engines, TV roll 180, trim load +0.1, -5.7, +5.7, weight 217 600, Tig 2 days/21:56:27.8, take 7 targets, -0066.7, all balls, all balls, burn attitude 165 008 024, delta V total, 0066.7 00:38, VGO X+0064.21, all balls, +018.06, target apogee 168, perigee +121, and the helium valves alpha is closed, bravo is open, read back.

SPACECRAFT Roger, Houston. OMS both, TV roll 180, trim load +0.1, -5.7, +5.7, weight 217 600, Tig 2/21:56:27.8, take 7 delta VX -66.7, burn attitude 165 008 024, delta V total, 66.7, TGO 38 seconds, VGO in X +64.21, all zeros, +18.06, 168 by 121 and in the helium press A to close and B to open.

CAPCOM Readback is correct and those targets are onboard. Now I've got the recirc OMS burn number 5, when you're ready.

SPACECRAFT Okay, go ahead.

CAPCOM Okay. Again we're both OMS engines and we've got a bit of an unusual TV roll for you, 278 and the reason for that is we want to get Ku-band coverage during the burn, that's at DTO. So that's TV roll 278, trim load +0.1, -5.7, +5.7, weight 261 164, Tig 002/22:41:24.6, take 7 targets, -0083.3, all balls, -002.4 - -

END OF TAPE

CAPCOM plus 0.1, minus 5.7, plus 5.7, weight 216 164, TIG 002/22:41:24.6, take 7 targets, minus 0083.3, all balls, minus 002.4, burn attitude 303 215 328, delta V total 0083.3, TGO 00:47, VGOs plus 0080.22, all balls, plus 022.56. Target apogee and perigee 121, helium regs alpha open, bravo closed. Read back.

SPACECRAFT Okay, Houston, for the recirc number 5, both OMS engines, TV roll is 278, for Ku-band coverage, trim load is plus 0.1, minus 5.7, plus 5.7, weight 216 164, TIG 2/22:41:24.6, take targets minus 83.3, all zeros, minus 2.4, burn attitude 303 215 328, delta V total is 83.3, TGO is 47 seconds, plus 80.22, all zeros, plus 22.56, it will be a circular orbit at 1.1 and the helium vap isols A open, and B closed.

CAPCOM Readback is correct, we think there is a strong chance we will not be able to uplink the targets for that burn so you should expect to enter them manually.

SPACECRAFT Okay, and we'll check up on you anyhow.

CAPCOM Challenger, 30 seconds LOS, we'll pick you up through TDRS in about 12 minutes at 20 plus 54.

SPACECRAFT Roger, Houston, we'll see you then.

CAPCOM And you might want to know the burritos have just come in.

SPACECRAFT You're breaking my heart.

PAO This is Shuttle Control, loss of signal through Orroral. Challenger will be acquired on TDRS in just over 11 minutes. During this pass over Australia through Yarragadee and Orroral, Capcom Jeff Hoffman passed up the PADS for OMS burns 4 and 5 those maneuvers designed to circularize the orbit at 121 nautical miles, the altitude selected for the oxygen interaction on materials experiment. Ignition time for OMS number 4 will be 2 days 21 hours 56 minutes 27.8 seconds. Both engines will be used, change in velocity will be 66.7 feet per second, duration of the burn 38 seconds, resulting orbit 168 by 121 nautical miles. OMS number 5 will also use both engines, ignition time 2 days 22 hours 41 minutes 24.6 seconds. The delta V of 83.3 feet per second, duration of the burn 47 seconds resulting orbit 121 nautical miles circular. Challenger's current orbit is 168 by 159 nautical miles. At 2 days 20 hours 45 minutes mission elapsed time, this is Shuttle Control Houston.

END OF TAPE

PAO Challenger's current orbit is 168 by 159 nautical miles. At 2 days 20 hours, 45 minutes mission elapsed time, this is Shuttle Control Houston.

CAPCOM Challenger, Houston's back with you through TDRS.

SPACECRAFT Roger, Houston, read you loud and clear and Richard's just finishing up his morning manual cabin procedure.

CAPCOM Successfully, I hope. Challenger, Houston, could you go down and check the TAGS again, we're still trying.

SPACECRAFT Roger, Houston, Guy's checking it right now. Okay, Houston, we just checked it and unfortunately we have two more blank sheets of paper.

CAPCOM Ah, but those are mode 3 blank sheets of paper, before you only had mode one blank sheets of paper.

SPACECRAFT Well that's good to know. We're going to have a real raft of paper airplanes up here before long.

CAPCOM How do the paper airplanes fly in zero-g?

SPACECRAFT We're still evaluating that.

CAPCOM I'm sure the SETP will be very anxious to find out.

SPACECRAFT No doubt. Hey, Houston, Challenger.

CAPCOM Go ahead, Dan.

SPACECRAFT Roger, we copied you message this morning on circ pumps 1 and 2 and it looks like the helium pressure on system, correction that was 1 and 3, it looked like the accumulator pressure on system 2 is about 54 psi above the alarm and I was wondering what the current status of circ pump number 2 is?

CAPCOM Stand by. Challenger, Houston, on the circ pumps, system 2 pump is officially declared dead and not to be used. The pressure limit for the FDA has been lowered to 1650, so you're still 334 psi away from that.

SPACECRAFT Okay, thanks a lot. Looks like Florida's cloudy today, tonight.

CAPCOM Yes, we've got a weather map down here and it shows a lot of clouds all over there. Edward's was pretty clear though.

STS-8 AIR/GROUND TRANSCRIPT t151j 245:03:16 9/02/83 PAGE 2

SPACECRAFT Tell you what, there's a lot of thunderstorm activity out over the Gulf to the east of Florida. I'm sorry, out in the Atlantic. And from here it looks like most of the eastern seaboard is cloudy. We can see the city lights under the clouds, but a lot of them.

CAPCOM Yes, we're looking at our weather map here, see pretty much the same thing, but I'd sure like your view right now.

SPACECRAFT You bet.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t152j 245:03:55 9/2/83 PAGE 1

CAPCOM Challenger, Houston, we lost you through TDRS for a bit but we've got you back now through Dakar.

SPACECRAFT Roger, Houston, and we just started our maneuver to the burn attitude.

CAPCOM Okay, and we'll be watching you. Challenger, Houston.

SPACECRAFT Roger, Jeff, go ahead.

CAPCOM Two things we see a cabin PPO2 alarm, ECOM wants you to know it looks like a noisy transducer and no action. And while we've got you, we'll let you know that we're looking at your targets, your vector and the gimbal check, they all look good for the burn and we'll check with you one more time through IOS.

SPACECRAFT Okay, Jeff, we sure appreciate you all watching and yes we noticed that PPO2 B seem to rise after I completed the cabin management a while ago. Thanks a lot and we'll see you later.

CAPCOM Right.

PAO This is Shuttle Control, 2 days 21 hours 49 minutes mission elapsed time. We've had LOS through TDRS, the Indian Ocean station will lock on to the Challenger in about 30 seconds. This is Shuttle Control, 2 days 21 hours 50 minutes mission elapsed time, have acquisition of signal through the Indian Ocean station. TDRS has had loss of signal.

CAPCOM Go ahead.

SPACECRAFT I need to give you two times, HRM Ops time and PRM Ops time. We activated the HRM at 2 days 21 hours and 30 minutes. And the PRM we activated at 2 days 21 hours and 49 minutes.

CAPCOM Okay, thank you, Guy.

PAO This is Shuttle Control, Challenger is at proper attitude for the OMS 4 burn. Ignition time for that burn is just after LOS at this station.

CAPCOM Challenger, we're going LOS, have a good burn, talk to you through Yarragadee.

SPACECRAFT Roger, Jeff, we'll be right there.

PAO This is Shuttle Control, Indian Ocean station has loss of signal. Challenger's next acquisition will be through

STS-8 AIR/GROUND TRANSCRIPT t152j 245:03:55 9/2/83 PAGE 2

Yarragadee in just under 9 minutes. We'll get a report at
Yarragadee on the OMS 4 burn which should have just started. At
2 days 21 hours 56 minutes, mission elapsed time, this is - -

END OF TAPE

PAO - - just under 9 minutes. We'll give a report at Yarragadee on the OMS 4 burn which should have just started. At 2 days 21 hours 56 minutes mission elapsed time, this is Mission Control Houston.

CAPCOM Challenger, Houston's with you through Yarragadee for 8 minutes.

SPACECRAFT Roger, Houston, the burn went off on time, the residuals were approximately 0's nominal burn. We've loaded the targets for the second burn and we're on the way there now.

CAPCOM That's good to hear, thanks.

SPACECRAFT Houston, Challenger, do you read?

CAPCOM Loud and clear.

SPACECRAFT Roger, burn was on time and residuals were zero. Nominal burn.

CAPCOM Okay, we actually heard you the first time did you not get my call?

SPACECRAFT Negative.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead.

CAPCOM Not too long after the next burn you've got a KU test in the CAP and we've got a change, slight change in the procedure which I would like to give you on page 2-7 of orbit ops. I'll stand by.

SPACECRAFT Okay, stand by. Okay, Jeff, we're looking at it, go ahead.

CAPCOM Okay, it's in the setup part, section 1, the second line, the Ku where it now says auto track, the Ku should be set to manual SLU and then the second line from the bottom of the setup where it says check track, delete that line. And that's nominal.

SPACECRAFT Okay (garble) 1 setup, second line Ku should be set to manual SLU and the next to last line, the, should delete the line that says 'check track, talkback barberpole.

CAPCOM That's correct.

SPACECRAFT Okay, thanks, Jeff.

STS-8 AIR/GROUND TRANSCRIPT t153j 245:04:21 9/1/83 Page 2

CAPCOM Challenger, Houston, going LOS in 25 seconds, pick you up through Hawaii at 22 plus 34.

SPACECRAFT Roger, Houston, Hawaii at 22 34.

PAO This is Shuttle Control, Yarragadee has loss of signal, Commander Dick Truly reporting a good OMS 4 burn during this pass at Yarragadee. Next station will be Hawaii in just over 19 minutes. Challenger now getting configured for the OMS 5 burn which is scheduled for 22 hours 41 minutes 24.6 seconds. That burn designed to circularized the orbit at 121 nautical miles. At 2 days 22 hours 15 minutes mission elapsed time, this is Shuttle Control Houston. This is Shuttle Control at 2 days 22 hours 33 minutes mission elapsed time, we're standing by for acquisition through Hawaii.

END OF TAPE

CAPCOM Challenger, Houston, with you through Hawaii for a minute.

SPACECRAFT Roger, Houston, understand and we're (garble) burn attitude.

CAPCOM We see that in our data, thanks. Challenger, Houston, we see your targets and attitudes, everything looks good for the burn.

PAO This is Shuttle Control, 2 days 22 hours 39 minutes mission elapsed time, Challenger operating on S-band through TDRS now. One minute 48 seconds away from the OMS 5 burn.

SPACECRAFT Okay, Houston, CDR.

CAPCOM Go ahead, Dick. Dick, we missed you, just after you called, we're back with you.

SPACECRAFT Roger, we're 10 seconds to the burn (garble).

PAO Good burn on both engines in progress.

SPACECRAFT Houston, Challenger, burn's complete, the residuals are near zero, and it was on time.

CAPCOM Well we were watching and it sure looked good to us, we managed to follow you with the Ku-band all the way.

SPACECRAFT Houston, CDR, how do you read?

CAPCOM Loud and clear although we've been in and out as far as TDRS for a little while, but we've got you now. Challenger, Houston, we're with you UHF through Goldstone, and we've been hearing you but I think you have not been hearing us.

SPACECRAFT Roger, Houston, and we're getting into the Ku-band manual acquisition test.

CAPCOM Okay, I've got a message for you on that. There's one more addition to what I gave you before on page 2-7 and that is when you actually get down to the test part before Ku search to search, you've got to take the Ku and put it back to auto track. We apologize for that, in the first set of procedures we gave you.

SPACECRAFT Roger, understand the step, insert a step before the Ku search and that is take the Ku to auto track.

CAPCOM That's correct, the reason we changed the autotrack to manual at the top was that if it happens to be locked already

STS-8 AIR/GROUND TRANSCRIPT t154j 245:05:06 9/2/83 PAGE 2

and you're in the autotrack position then you are not able to manually SLU but when you actually do the search you want to be in autotrack. Challenger, Houston.

SPACECRAFT Go ahead, Houston.

CAPCOM If you haven't already done it, we would like you to delay the Ku-band manual acquisition test, we're having problems with the TDRS coverage and we'd like to be able to watch you do it and we will give you a call when we're ready.

SPACECRAFT Okay, Jeff, we have just completed step 1, the setup. Would you like us to back out of this, or remain in our present configuration?

CAPCOM No, that's sounds optimum, if you just hold what you've got then you'll be ready to go with the actual test part as soon as we give you a call.

SPACECRAFT Okay, we're sitting on page 2-7 then and we have completed step 1 and that's where we're sitting.

CAPCOM Okay and I hope we get to you as soon as possible.

SPACECRAFT Okay.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t155j 245:05:22 9/2/83 PAGE 1

CAPCOM Okay and I hope we get to you as soon as possible.

SPACECRAFT Okay.

PAO This is Shuttle Control, 2 days, 22 hours, 58 minutes mission elapsed time. Challenger's current orbit is 121.9 nautical miles by 120.7 nautical miles. The period is 1 hour, 29 minutes, 5 seconds.

CAPCOM Challenger, Houston we're 30 seconds LOS, Bermuda. If we don't get back on TDRS we'll speak to you at Dakar in 5 minutes and we're still waiting on the Ku-band manual acquisition test.

SPACECRAFT Roger, Houston.

PAO This is Shuttle Control, Bermuda has loss of signal, we expect to lock up momentarily on TDRS.

CAPCOM Challenger, Houston, we've only got you through TDRS and we're go for the Ku-band manual acquisition test. Challenger, Houston, how do you copy?

SPACECRAFT Roger, Houston, we'll be with you in just a second we were just cleaning the cabin fan filters and that's why you see the alert.

CAPCOM Okay, thanks for letting us know, and we just wanted to check that we did indeed have comm.

SPACECRAFT Roger, we have you loud and clear. Houston, CDR, the first attempt appeared successful we purposely were near the limit of the 5 degrees as printed in the checklist between command and actual, we're going to slew it off and repeat it.

CAPCOM Thanks, Dick, and it looked good down here, we'll watch for your second.

SPACECRAFT Houston, Challenger, it looks like it works like a champ.

CAPCOM Well we saw the second one and INCO seems pretty happy.

SPACECRAFT Okay. If that's okay then we'll leave it in this configuration and, or whatever configuration you tell us to put it in and go back to cleaning the cabin fan.

CAPCOM INCO's happy, configuration looks good, Dick, so press on with whatever else.

SPACECRAFT Okiedoke, see you later.

SPACECRAFT Houston, MS3.

CAPCOM Challenger, Houston, we had lost lock for awhile, did you just try to call us?

SPACECRAFT That's affirm, this is MS3, how do you read?

CAPCOM Read you real well, Bill.

SPACECRAFT Okay, you might pass on the biomed that there is some data. Day 2, hour 20, from 40 to 56 minutes. There's a second run, day 2, hour 21, 15 to 30 minutes. Also day 02, 22 hours, 03 to 09 minutes and there will be other data of course coming down.

CAPCOM Okay, let me just give that to you back. All on day 2, 20 hours, 40 to 56; 21 hours, 15 to 30; 22 hours, 03 to 09.

SPACECRAFT That's correct.

CAPCOM Thanks, Bill. Challenger, Houston, on your cabin fan.

SPACECRAFT Say again, Jeff?

CAPCOM We're going to be losing TDRS stage in little over a minute and ECOM would sleep a lot better if he knew that your cabin fan were back on.

SPACECRAFT Oh yeah, we got it back on about 2 minutes ago.

CAPCOM Okay, thanks, Dale.

END OF TAPE

CAPCOM ...little over a minute and ECOM would sleep a lot better if he knew that you're (garble) were back on.

SPACECRAFT Oh yes, we got it back on about 2 minutes ago.

CAPCOM Okay, thanks, Dale.

SPACECRAFT It's been on now for a couple of minutes and the fan filters were really not that dirty.

CAPCOM Okay, it turned out we had some static data there, but thanks for letting us know.

SPACECRAFT Roger.

CAPCOM Challenger, Houston, we'll be going LOS in about 30 seconds, we'll pick you up through Yarragadee at 23 plus 40.

SPACECRAFT Roger, copy.

PAO This is Shuttle Control, Challenger is LOS, next acquisition through Yarragadee in 14 minutes. At 2 days 23 hours 26 minutes mission elapsed time this is Shuttle Control Houston. This is Shuttle Control, 2 days 23 hours 40 minutes mission elapsed time, standing by for acquisition through Yarragadee.

CAPCOM Challenger, Houston, with you through Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Roger, we've got the cabin fans cleaned, they look pretty good. Got the IMU fans cleaned, the screens on them, got it without taking down that overhead panel by just taking the (garble) tool and sticking it up there and cleaning them off and we're going after the DEU filters now.

CAPCOM Okay, sounds like a regular spring cleaning.

SPACECRAFT IMU fans covers, we haven't cleaned them on the flight yet, they were pretty well covered but we cleaned the cabin fans a couple of days ago and they were suprisingly clean when we got them, got down in there.

CAPCOM Dan, when you've got a minute, I've got something for you on the PP02 system regarding the alarms that you got a little while ago.

SPACECRAFT Roger, go ahead.

CAPCOM In the manual cabin atmosphere management you were using the procedure on 5-10 of the Orbit Ops Checklist. And ECOM suggests that if you go to the reset caution and warning limits at the bottom that you'll avoid any more PPO2 alarms. And specifically that means a 3.6 limit for the PP02.

SPACECRAFT Roger, and the thing had really become a nuisance, we planned to go ahead and do it anyhow but we'll take care of that shortly.

CAPCOM Yes, I don't think there's any great rush on that. Also he had a question, when you did get the PP02 alarm earlier this morning, had you done anything shortly before that in terms of changing around the temperature setting on the temperature controller down under the middeck floor?

SPACECRAFT Jeff, we did, I'm not, I'm not sure that I recall exactly in what order we did it. I did set the, I did change the temperature setting since it was a little warm in the cabin. But I thought it was after we had the PP02 alarm.

CAPCOM The reason I asked is apparently there's been some indication in the past that some of those sensors are fairly temperature sensitive and a change in the temperature can trigger them and that's why they wanted to know. Challenger, Houston, I've got a message for you regarding the upcoming Ku-band roll maneuver.

SPACECRAFT Roger, go ahead.

CAPCOM In order to accomplish the test, it's going to be necessary to start that as soon as possible after TDRS AOS, our current estimate of that is 00 07, is the AOS TDRS. Even if we should lose voice communication during that time, INCO would like you to proceed and do the entire test.

SPACECRAFT Okay, even if we're no comm, its 00 - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t157j 245:06:17 9/2/83 PAGE 1

CAPCOM 0007, is the AOS TDRS, even if we should lose voice communication during that time, INCO would like for you to proceed and do the entire test.

SPACECRAFT Okay, even if we're no comm at 0007 we'll start the maneuver.

CAPCOM That's correct Dick. Challenger, Houston, also just so you know what we're doing, we intend to turn on one of the payload bay camera's while you're doing that roll test just so we can get some spectacular views of your elevon rolls.

SPACECRAFT Roger, Houston, we'll be looking for it.

CAPCOM Challenger, we're going LOS 20 seconds, and hopefully we'll be talking to you through TDRS.

PAO This is Shuttle Control, Yarragadoo has LOS, next acquisition, Hawaii in about 18 minutes with TDRS acquisition about a minute after that. At 2 days, 23 hours, 48 minutes mission elapsed time, this is Shuttle Control Houston.

PAO This is Shuttle Control at 3 days, 0 hours, 9 minutes mission elapsed time. We're waiting to lock up on TDRS at Hawaii.

CAPCOM Challenger, Houston with you through Hawaii, UHF at the moment.

SPACECRAFT Roger, Houston, we started the roll maneuver at 00 + 07.

CAPCOM Okay, thanks.

SPACECRAFT And incidentally, I'm looking out left side of the window and see a bunch of lights which I assume is one of (garble).

CAPCOM Why we're on the subject of looking out the window, I've got a couple of Earth Ops notes if you've got something to write with.

SPACECRAFT Okay, stand by just one second. Okay Dan's ready to copy.

CAPCOM Okay, the 2 things are, that first of all there's a tropical storm name of Ellen at 8 degrees north, 142 east. It is a little bit west of a point halfway between Guam and New Guinea, and that ought to be visible just before you get to your next sunset, that's on, going into orbit 50. And the suggestion is that you try to photograph the storm while you're approaching

STS-8 AIR/GROUND TRANSCRIPT t157j 245:06:17 9/2/83 PAGE 2

it to get the cloud structures using a 100 mm lens, at exposures ranging from F5.6 to F8.0.

SPACECRAFT Roger, we copy, go ahead.

CAPCOM Okay, and the second is a reminder that the second best view that you're likely to get of Henderson Island during the entire flight is going to come up later today on rev 56.

SPACECRAFT Okay, thank you very much we'll try to get it again, we have gotten that site twice, unfortunately there's a good deal of cloud cover there, and both times, oh I'd say half the Island was covered in clouds, but we have seen it twice.

CAPCOM I think that's why the suggestion was to try it again and you know, just keep taking - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t158j 245:06:43 9/2/83 PAGE 1

CAPCOM I think that's why the suggestion was to try it again and you know just keep taking pictures and hope for a break.

SPACECRAFT You bet.

CAPCOM We're going LOS Hawaii on UHF and we'll pick you up at Goldstone at about 5 minutes.

SPACECRAFT Roger.

CAPCOM Challenger, Houston with you through Goldstone, UHF.

SPACECRAFT Roger, Jeff, loud and clear.

CAPCOM I just want to let Dale know if he wants to discuss that RMS master alarm at some point, we have some information on it, it's nothing that's going to affect your operations so its really your call if you want to talk about it.

SPACECRAFT Okay, thanks alot, Dale is busy doing something else, and well he took a break here, he's listening, go ahead.

CAPCOM Okay. Apparently this is referred to as the ghost alarm and it was seen on STS-7, what happens is in direct drive the joint angles, when the brakes are on, the joint angles are not updated. As soon as you take the brakes to OFF, software performs a consistency check using the last joint angles that it had and if you have moved any of the joints while you were in direct drive with the brakes ON, then the consistency check is going to fail and it will give you a control error, a master alarm and a message. As soon as you cycle the brake switch on and off again the GPC is going to see this as recycling the brakes and it resets and it reinitializes the angles and the consistency check and the errors are all going to be set to OFF and you won't get any further master alarms. That's probably what happen.

SPACECRAFT Okay, Jeff, we understand, I think I've seen or heard something similar to that before we launched but also you have a real bad echo now. Houston, CDR.

CAPCOM Go ahead, Challenger. Challenger, Houston.

SPACECRAFT Houston, CDR, on, in the orbit ops checklist page 1-4 on step 1, I thought I'd give you the times just so that if my arithmetic is wrong you can disagree with me. I started the first roll at 07 minutes after this hour, I've got to start the next maneuver is set up with a start time of 3 days 0 hours 31 minutes and 0 seconds and I intend to do the stop item 21 at 3 days 0 hours 55 minutes, that's 55 minutes and 0 seconds.

STS-8 AIR/GROUND TRANSCRIPT t158j 245:06:43 9/2/83 PAGE 2

CAPCOM Okay, Dick, thanks for the times. One note on the comm, we're talking steadily with UHF and when the TDRS sometimes come in and out and we have a TDRS on top of the UHF, that's what gives us that echo.

SPACECRAFT Okay, understand. And Houston, CDR, no hurry but I've got a viz ops question.

CAPCOM Challenger, Houston, I think we've gone LOS, during your last question Dick, we'll pick you up at Mila at 00 plus 23.

CAPCOM Challenger, Houston, we're trying you through TDRS again, Dick I just heard you mention you had some question about viz ops and then we went LOS on our UHF link.

SPACECRAFT Roger, no problem, some time when you have a minute I do have a question, something we saw and to talk about it you might, do you have, if you have one of the world atlas' it's on page 28.

END OF TAPE

SPACECRAFT Roger, no problem, sometime when you have a minute I do have a question on something we saw and to talk about it, you might, do you, if you have one of our world atlases it's on page 28.

CAPCOM Standby. Okay we're with you down under.

SPACECRAFT After we did the first burn and - so we were in an orbit of 160 by 120 and we were preparing for the second burn and in the maneuver, so we were in some crazy attitude, I'm not sure which, in the area, if you're looking on that chart, in the area of about 24 to 26 degrees south latitude and longitude of about 140 east, there is a huge area of extremely large and complex drainage rivers out there in the dessert and there is one out there somewhere that just the right angle, we happened to glance down and it make a huge perfect circle. It almost looked like it was an old impact creator, very large where the drainage rivers had somehow formed a periphery of it and I was wondering if there was anything like that down in that area.

CAPCOM We'll pass those coordinates on and there are lots of unknown impact creators which haven't been discovered and it could be that seeing them from space is the best way to do it. That's real interesting.

SPACECRAFT And Jeff, the, I'm not sure about the latitude and the longitude because that map really is not good enough to indicate what we saw but the time was 22:16.

CAPCOM MET of 2 days, 22:16, okay we ought to be able to reconstruct by then. Were you looking relatively straight down?

SPACECRAFT I believe that this particular site was just to the south of us, I would guess, but you know within 100 miles south of our nadir.

CAPCOM Thanks.

SPACECRAFT And Jeff, while we were down cleaning the inlet filters on the DEUs on the port side, I also took, I guess it must be L17 off, and cleaned out the MCIU and both the inlet filters on it was really clogged.

CAPCOM Okay, we'll pass that information along.

PAO This is Shuttle Control, 3 days, 0 hours, 47 minutes, we're getting a picture now from the payload bay camera. Challenger still performing the Ku-band roll test. Challenger currently over the south Atlantic Ocean. This is Shuttle Control 3 days, 0 hours, 59 minutes mission elapsed time. Challenger has loss of signal with TDRS, still in

STS-8 AIR/GROUND TRANSCRIPT t159j 245:06:55 9/02/83 PAGE 2

acquisition at, UHF acquisition at Botswana for another 2 minutes.

CAPCOM Challenger, Houston, we'll be going LOS here out of Botswana in about 30 seconds, pick you up in another 15 minutes at Yarragadee at 1 + 15. Challenger, Houston, 10 seconds LOS, Yarragadee at 1 + 15.

PAO This is Shuttle Control, Challenger has flown out of range of Botswana now.

END OF TAPE

CAPCOM Challenger, Houston 10 seconds LOS, Yarragadee at 1 + 15.

PAO This is Shuttle Control, Challenger has flown out of range of Botswana now. Yarragadee will be the next station in about 13 1/2 minutes. At 3 days, 1 hour, 2 minutes mission elapsed time, this is Shuttle Control Houston.

PAO This is Shuttle Control at 3 days, 1 hour, 8 minutes mission elapsed time. The payload's officer has received an INSAT report from the tracking station at Hassan, India. INSAT is in an orbit of 20,044 nautical miles by 4,133.7 nautical miles, the second apogee kick motor firing has been changed to a Greenwich Mean Time of day 245, time 14:30, GMT.

CAPCOM Challenger, Houston's with you through Yarragadee for 4 minutes.

SPACECRAFT Roger Houston, loud and clear. Houston, CDR.

CAPCOM Go ahead, Dick.

SPACECRAFT Roger, I went ahead and did the roll maneuvers for the common track in the blind and never heard anything during the test, how'd it come out?

CAPCOM Stand by. Dick, INCO says they're going to have to get most of their data off the recorder, but the little bit they saw makes it look like they got the data they needed and everybody thanks you.

SPACECRAFT Well we sure hope so.

CAPCOM We're going LOS here in 30 seconds, pick you up at Guam at 1 + 28.

SPACECRAFT Okay, we'll be on the lookout for the storm.

PAO This is Shuttle Control, Yarragadee has loss of signal. Next acquisition through Guam in just over 8 minutes. Challenger will begin orbit number 50 just prior to Guam acquisition. At 3 days, 1 hour, 20 minutes mission elapsed time this is Shuttle Control Houston.

PAO This is Shuttle Control at 3 days, 1 hour, 27 minutes mission elapsed time. Standing by for acquisition through Guam.

SPACECRAFT Roger. Stand by, Houston. Roger, Jeff, go ahead.

CAPCOM Okay, the MAD strain gage signal conditioners which you turned on yesterday, have been on for over a day now and the

STS-8 AIR/GROUND TRANSCRIPT t160j 245:07:32 9/2/83 Page 2

MADS is warm enough to carry on it's own for about 2 days, so we'd like you on A7L, to take the MAD strain gage to PCM enable.

SPACECRAFT Okay, PCM enable.

CAPCOM Challenger, Houston, we're 45 seconds LOS. Our data down here shows payload primary main C switch off and we'd like it on, on panel R1, to keep power going to the ASE out there in the bay. And we'll pick you up through Hawaii at 1 + 40.

SPACECRAFT Roger, we got the switch back on and we're not sure how it got bumped off.

CAPCOM Okay, thanks. Talk to you at Hawaii.

SPACECRAFT Okay.

PAO This is Shuttle Control, Guam has LOS, next station is Hawaii in 7 minutes, at 3 days, 1 hour 32 minutes mission elapsed time this is Shuttle - -

END OF TAPE

PAO This is Shuttle Control, Guam has LOS. Next station is Hawaii in 7 minutes. At 3 days, 1 hour, 32 minutes, mission elapsed time, this is Shuttle Control Houston.

PAO This is Shuttle Control, 3 days, 1 hour, 39 minutes mission elapsed time. Challenger about to be acquired at Hawaii.

CAPCOM Challenger, Houston with you through Hawaii for 7 minutes and we've got a request following (garble) of the payload primary main C switch.

SPACECRAFT Challenger, go ahead.

CAPCOM ECOM's going back into the data and it looks like its been off for roughly 6 1/2 hours, we'd like to get a temperature check on the PAM AS&E, and we'd like, if you could, to perform the PAM ASE verbal test on 2-7 of the deploy checklist. And we'd like that over a ground pass, either now or over the States so we could look at the data.

SPACECRAFT Roger, Houston. How long is this particular pass?

CAPCOM Say again.

SPACECRAFT How much AOS time do we have on this particular pass?

CAPCOM You've got 6 minutes left on this pass.

SPACECRAFT Okay, let's see if we can try and do it now. Okay Houston, we've got the PAM ASE thermal test in progress.

CAPCOM Thanks, Guy. And for your information we've just sent up on the teleprinter some entry weather and also world news, which you might be interested in.

SPACECRAFT Rog, we have it and much appreciate sending that info up.

CAPCOM Challenger, Houston, all of your temperatures in the ASE look okay, and it's okay to power down the SCA now.

SPACECRAFT Roger, Houston, will do, thank you.

CAPCOM Challenger we're switching over to TDRS in about 15 seconds.

SPACECRAFT Roger.

PAO This is Shuttle Control, Hawaii has LOS. Acquisition with TDRS is underway now. Here in the Mission Control Center, a shift handover is taking place. There's a

change of shift briefing with Flight Director Randy Stone, is scheduled for 4 a.m. Central Daylight Time in the JSC news center, room 135. Change of shift briefing, 4 a.m. Central Daylight Time.

CAPCOM Challenger, Houston, Crystal Team with you through TDRS, how copy?

SPACECRAFT Roger, loud and clear, how us?

CAPCOM Got you guys loud and clear too, how's it going?

SPACECRAFT Well we're just, we're in position to capture on grapple fixture 5, so far so good.

CAPCOM Roger, and just to let you know, we have low, low bit data rate down here, so we don't have a good insight into what you're doing.

SPACECRAFT Okay, we'll keep you informed, the power up went nominally, the approach to the grapple was very quick and easy on Dale's part and we're just about to capture right now.

CAPCOM Roger.

SPACECRAFT Okay, got a good capture and we're - -

CAPCOM Challenger, Houston, with you through Botswana for 5 minutes.

SPACECRAFT Roger, Houston, loud and clear and we're releasing the keel latch.

CAPCOM Roger.

SPACECRAFT Hey, Houston, Challenger.

CAPCOM Houston, go ahead.

SPACECRAFT Roger. Earlier today they told us to be on the look out for those storms, I believe it was Ellen, south of Guam and on that particular - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t162j 245:09:02 9/2/83 PAGE 1

SPACECRAFT Roger, earlier today they told us to be on the look out for tropical storm, I believe it was Ellen, south of Guam and on that particular approach we did see it and got some pictures of it. It wasn't real obvious coming from the west but once you got to the south around to the east the circulation was pretty obvious and it looked like it covered quite an expansive area.

CAPCOM Roger, Dan, we'll look forward to seeing those pictures.

SPACECRAFT Houston, CDR we're unberthing the PSTA grapple (garble).

CAPCOM Roger, we copy.

SPACECRAFT And Houston, Dale says this is a piece of cake, we're 500 inches in Z.

CAPCOM Roger, Richard, we copy. We're 30 seconds LOS, see you at Guam, 3 plus 00.

SPACECRAFT Roger, see you at Guam.

PAO Mission Control Houston, loss of signal at Botswana. Challenger crew currently involved in the second day of testing the remote manipulator arm using the high mast object as a test load. Next station is Guam in 24 minutes, at which time we'll return. At day 3, 2 hours 35 minutes, Mission Control Houston. This is Mission Control Houston, Challenger is now in acquisition through Guam.

CAPCOM Challenger, Houston, Guam for 7 minutes.

SPACECRAFT Loud and clear and we're just up at the top of page 2-8.

CAPCOM Roger.

SPACECRAFT And Houston, Challenger, at time MET 3 days 2 hours 58 minutes we went over a volcano that was erupting.

CAPCOM Roger, Dale, we copy that.

SPACECRAFT It was a small single island from what we could see there were a lot of clouds around it so we didn't know quite where we were, but we got some pictures and maybe you can figure it out by the time.

CAPCOM Roger, we'll see what we can learn about it and get back with you.

SPACECRAFT And are we still going to have TV at Hawaii coming up here?

CAPCOM Roger tha, Dale, we're looking forward to it.

SPACECRAFT Okay, we've got the camera in the aft flight deck and one more thing I'd like you to look at, we'll still having problems it turns out with the elbow camera, I have it turned on and pointed down towards the PFTA, during this pass you might direct it for the downlink and look at it yourself and see what you can see. We noticed that as hard as it is to believe that we think there's a wire, a cable loose inside the lens because every once in a while you can see this black wire like shadow floating through the lens and the picture is very blurry and it kinda bounces around even though the camera is sitting steady.

CAPCOM Roger, Dale, we'll take a look at it.

SPACECRAFT Okay, appreciate it and as you'll can see we're doing the (garble) cap to the (garble) position right now. Comment on the fine qualities here with the grapple fixture 5, as we were coming out of bay, once we got up there good and high, I went to port and put in a full THC (garble) input and for about the first oh, I'd say 5 seconds or so, the thing would just sag in pitch about 3 or 4 degrees and you could see the kil pin was not going up at all and then finally, we start getting for real Z movement and you could see the kil pin starting to rise so, there's a pretty good, a pretty good pitch sag with those Z inputs.

CAPCOM Roger, Dale, you got a little like we saw in the MDF.

SPACECRAFT I knew you were going to say that, very much like what we saw in the MDF.

CAPCOM Roger, that's surprising.

SPACECRAFT We were surprised too. It'll be interesting to see what it does in the single joint mode.

CAPCOM Yes, roger, we'll watch it with you.

END OF TAPE

SPACECRAFT We were suprised too. It will be interesting to see what it does in the single joint mode.

CAPCOM Yes, roger. We'll watch it with you.

CAPCOM Challenger, Houston, we are 20 seconds LOS, we'll see you at Hawaii in 7 minutes and we look forward to some good TV.

PAO Mission Control, Houston, Loss of signal at Guam. Hawaii, 7 minutes away, where we expect live television from Challenger showing the remote manipulator arm activities with the payload flight test article. The crew mentioned that they were on checklist page 2-8 which is a section of the RMS checklist that has to do with the simulated deployment of the LDEF or the long duration exposure facility now planned for flight 13 and which weighs some 20,000 lbs. Hawaii in a little over 6 minutes, day 3, 3 hours, 8 minutes elapsed time, Mission Control, Houston.

PAO Mission Control, Houston, we have contact through Hawaii, should be getting live television momentarily.

CAPCOM Challenger, Houston, with you at Hawaii for 7 minutes.

SPACECRAFT Okay, Fish, and we're doing test number one which we're repeating on page 2-9. We got one of the inputs in incorrectly so we redapted the rates and here we go again.

CAPCOM Roger.

CAPCOM And Challenger, Houston, the TV picture that we have is a little fuzzy, I - there we go, now it looks real good.

SPACECRAFT Okay, I see you just directed the aft flight deck, that was the elbow camera you were looking at there first. We now think the lens may be loose inside there or something, we can see the whole, we thought was the cable, the whole ring floating around in the field of view.

CAPCOM Roger, it certainly didn't give us a very good picture.

SPACECRAFT Okay, the other cameras that you have are alpha and charlie to look at.

CAPCOM Roger, and we see you and Dan very clearly. It's an excellent picture down here.

SPACECRAFT Okay.

CAPCOM And Challenger, we've got a good shot of the side view of the PFTA with grapple fixture. Grapple fixture 5 in place.

SPACECRAFT Okay.

SPACECRAFT And we are in one of the vitorious 2 minute waits right now.

CAPCOM And Challenger, Houston, we'd like you to take a look at B17 and confirm the attitude deadband is 0.5.

SPACECRAFT Okay. Well, Fish, guess we did have that one wrong, we were within the deadband the whole time. Do we need to repeat it? We never had any firing.

CAPCOM Dale, we don't think so. We're going to check on that.

SPACECRAFT Okay, shy don we continue on with Bravo 18 and 19 and by that if you want to us to do bravo 17 over we can do it.

CAPCOM Roger, Dale, we concur.

CAPCOM And Challenger, Houston, we're 30 seconds Hawaii, LOS, we'll try and pick you up on TDRS.

CAPCOM And Challenger, Houston, with you through TDRS. How copy?

SPACECRAFT Roger, Fischer, you're loud and clear.

CAPCOM Roger, Dan, we've had a good picture of you guys the whole time. Comment for Dale, we're going to have to ask you guys to play B17 again. It looks like with the tighter deadband, we expect we will get some firings, so we'd like you to repeat test one on FS2-9 and make sure that the whole DAP of B17 is correct in there.

CAPCOM And Challenger, Houston, did you copy our last transmission?

SPACECRAFT That's affirmative, Fischer, repeat it.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t164j 245:09:55 9/2/83 PAGE 1

CAPCOM ...of D17 is correct in there. And Challenger, Houston, did you copy our last transmission?

SPACECRAFT That's affirmative, Fisher, repeat it.

CAPCOM Roger. And Challenger, Houston, just a quick question for Dale. During the LOS when we still had TV we, it looked like you were able to run the RMS with your feet, is that correct?

SPACECRAFT Well I was checking out the Lenoir theory that your toes are more useful than your fingers.

CAPCOM Yeah, I agree, I would want you to be a defeetest.

SPACECRAFT Actually normally the way I do it is I have my hands up a (garble) of the RMS and my toes back on the keyboard for CRT 1 typing in the next OCAP positions.

CAPCOM Roger, Dale, does that explain some of the problems we've had with the DAP?

SPACECRAFT No, no, no, I leave the DAP setup to the PLT and the CDR. You can see them both looking at CRT 4 now.

CAPCOM Yeah, Roger, we see that.

SPACECRAFT Okay, we have about half minute to go in the pause 2 minutes in the step 3 there prior to the pulses so you'll be able to see Dan put in the 3 pulses.

CAPCOM Roger, Dale, and we've got a super picture of you guys. And Challenger, Houston, just an advisory, Ku may be going into blockage and if so we'll temporarily lose voice on TDRS.

SPACECRAFT Okay we copy.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead, Fish.

CAPCOM Roger, Dale.

SPACECRAFT Houston, Challenger, go ahead.

CAPCOM Roger Dale. If you get a chance, maybe someone there could go down and check and see if there's a message in the TAGS, we'd like for you to specifically look and see if there's some black or gray streaks down the middle of first three pages and also check the fourth page, which should be a test message.

STS-8 AIR/GROUND TRANSCRIPT t164j 245:09:55 9/2/83 PAGE 2

SPACECRAFT Okay. Roger, stand by, Houston. Roger, Fish, go ahead. Okay PCM, enable. Roger, we got the switch back on and -

CAPCOM Challenger, Houston. Challenger, Houston.

SPACECRAFT Go ahead.

CAPCOM Roger, Dale, just a reminder to stay in free drift when you're maneuvering the arm.

SPACECRAFT Yeah we caught it.

CAPCOM Challenger, Houston, we just got a super picture of the PFTA as it passes over the Earth below.

SPACECRAFT Okay. And camera A is the one we're using for data now.

CAPCOM Roger. And Challenger, Houston, if you're not using Charlie camera we'd like to zoom back on it a bit.

SPACECRAFT Yeah, Fish, you guys can have the Charlie camera.

CAPCOM Roger. And Challenger, Houston, we just got a good shot from Charlie camera. We're looking right toward the 576 bulkhead, we can see the payload bay windows you're looking out of and we've got a good view of the Ku-band antenna.

SPACECRAFT And Fish, if you want to look at camera alpha, don't pan or tilt it, you'll see the next input go in which is, let's see, step 2 on page 3-3. It'll be a THC left.

CAPCOM Roger, Dale.

SPACECRAFT I think you can see the dynamics was very low on that one when I released the input.

CAPCOM Roger, Dale, we had a good shot of that.

SPACECRAFT And Houston, Challenger, are you able to make out any features on the ground with that view?

CAPCOM Roger, Dale, we were just noticing, it looked like you were approaching - -

END OF TAPE

SPACECRAFT I think you can see the dynamics was very low on that one when I released the input.

CAPCOM Roger, Dale, we had a good shot of that.

SPACECRAFT And Houston, Challenger, are you able to make out any features on the ground with that view.

CAPCOM Roger, Dale, we were just noticing it looked like you were approaching the desert that you folks have commented on earlier and we just passed over a feature that looked like a river. And Challenger, Houston, we've got you over Botswana for another minute and 30 seconds, we'll be going LOS at that time and we'll pick you up, next pass will be Guam at 4 plus 35.

SPACECRAFT Okay, Fish, see you there.

CAPCOM And Challenger, Houston, before you go LOS did you have a chance to check on the TAGS messages we asked about?

SPACECRAFT Dan's on the way down there. We answered it and I think we were LOS.

CAPCOM Roger, we're 30 seconds LOS, just thought you might have a chance to tell us what you found down there.

PAO Mission Control, Houston, acquisition through Guam at this time.

CAPCOM Challenger, Houston, with you through Guam for 5 minutes.

SPACECRAFT Roger, Houston, we're on page 3-7, finishing up, waiting for the time to run out on step 2.

CAPCOM Roger, and we didn't copy your answer to the query we had on the TAGS uplink.

SPACECRAFT The TAGS uplink, wait I'm sorry I think I did tell you we had the blank pages is that correct?

CAPCOM Negative, we didn't get that, Richard.

SPACECRAFT Okay, I'm sorry I thought you answered me. We, the uplink that you called up to us, we went down there and there was 4 blank pages.

CAPCOM Roger, we copy, 4 blank pages. Was there a black or gray line down any of those pages?

SPACECRAFT That's negative, Fish, they were completely blank.

STS-8 AIR/GROUND TRANSCRIPT t165j 245:10:32 9/2/83 PAGE 2

CAPCOM Roger, we copy, 4 blank pages. And Challenger, Houston, it looks to us down here as if the video, looks like the video is down on TAGS and we're not going to plan to use it anymore for the duration of the mission.

SPACECRAFT Okay, I understand. And we just pumped the (garble) there, flying her around to get, make sure we (garble) the tail.

CAPCOM Roger, Dale. Challenger, Houston, we're 30 seconds LOS, we'll see you in 8 minutes at Hawaii.

SPACECRAFT Roger, see you in Hawaii.

PAO This is Mission Control Houston, loss of signal at Guam. Hawaii 7 minutes away. Apparently the text and graphics system or TAGS which is a facsimile type receiver onboard Challenger is not receiving the samples and test patterns being sent up from the ground. So it appears that it is down for the duration until it can be repaired between flights. We'll return in 6 minutes at Hawaii, day 3, 4 hours 42 minutes, Mission Control Houston. Mission Control Houston, expecting acquisition momentarily through Hawaii followed hopefully by TDRS acquisition.

CAPCOM Challenger, Houston, with you through Hawaii for 7 minutes. Challenger, Houston, with you through Hawaii for 6 and a half minutes.

SPACECRAFT Roger, loud and clear, we're on 3-9 about to do the direct test.

CAPCOM Roger. Challenger, Houston, we're 1 minute LOS, we'll try and pick you up on TDRS afterward and we'd like you to take your (garble) select switch to TR.

SPACECRAFT Willco.

PAO Mission Control Houston, loss of signal at Hawaii -

END OF TAPE

CAPCOM We'll try and pick you up on TDRS afterward, and we'd like you to take your encryption select switch to TR.

SPACECRAFT Wilco

PAO Mission Control, Houston. Loss of signal at Hawaii, orbit 52. Crew currently in the direct drive testing of single joint mode in the Remote Manipulator System. Next station, Botswana, in 40 min unless the Tracking Data Relay Satellite is able to acquire Challenger. We're within the range, or within the band of coverage by TDRS at this time. At 3 days, 4 hr, 57 min elapsed time, Mission Control, Houston.

PAO This is Mission Control, Houston. Acquisition momentarily expected at Botswana UHF voice relay station.

CAPCOM Challenger, Houston with you through Botswana for 5-1/2 min.

SPACECRAFT Roger, Houston. We're on page 4-5, step 5. Just fired the first pump.

CAPCOM Roger. We copy.

SPACECRAFT And Houston, do you want bypass yet?

CAPCOM That's affirmative, Richard.

SPACECRAFT And Houston, Challenger.

CAPCOM Roger, Dale. Go ahead.

SPACECRAFT Okay. We're almost done with this RMS PRCS interaction. Okay to head to Orbiter RMS dynamic interaction. We have a note here on page 6-2 that we've written to ourselves to let you guys know so that you can send up an ACIP command or something. Do we have IOS following this, Botswana?

CAPCOM Dale, you're way ahead of us. We'd just discussed that down here, and if you would wait until we get to IOS to begin that part of the test, we'll have ACIP.

SPACECRAFT Okay. We'll wait till we talk to you at Indian Ocean.

CAPCOM Roger that, and I have a message for Richard.

SPACECRAFT (Garble)

CAPCOM Well, Richard, just wanted to remind you that September 3rd was Eddie's birthday.

SPACECRAFT You bet. Thanks a lot.

CAPCOM Challenger, Houston. We're 30 sec LOS. See you at Indian Ocean 7 plus 19.

SPACECRAFT Roger, Houston.

CAPCOM Challenger, Houston's with you at IOS for 6-1/2 min.

SPACECRAFT Roger, Houston, and we are, standby 1. We're on page 6-2, setting up for the dynamic interaction test.

CAPCOM Okay. Thanks, Richard. We're following you.

CAPCOM And Challenger, Houston, just a reminder, the ACIP is on.

SPACECRAFT Okay. So we're going proceed with the test. Is that right?

CAPCOM Roger that, Dale.

SPACECRAFT Thank you. John, we've drifted all over the sky today, but we've kept at least a couple of windows toward the Earth at all times.

CAPCOM Roger. We copy that, Richard. Thanks.

CAPCOM And Challenger, Houston, we're still trying to troubleshoot TAGS, and we have commanded up another sheet to you, if you could look at it and let us know whether you see a line in the blank sheet anywhere, please.

SPACECRAFT Okay.

CAPCOM Challenger, Houston. We're going go LOS in 30 sec. We'll see you at Hawaii 6 plus 22.

SPACECRAFT Okay. See you then.

END OF TAPE

PAO Mission Control, Houston. Loss of signal at Indian Ocean Station.

CAPCOM Roger. Thank you, Richard, for the report.

CAPCOM And Challenger, Houston. We will probably power the TAGS off via uplink command.

SPACECRAFT Roger, John. Just let us know.

CAPCOM Roger that.

PAO Well, almost loss of signal. Hawaii next station in 29 min. This is Mission Control, Houston.

CAPCOM Challenger, Houston's with you at Hawaii for 6 min.

SPACECRAFT Okay, John, and we're on the auto sequenced, heading for point number 4.

CAPCOM Okay. Thanks Dale. We're following you.

SPACECRAFT We had a little trouble getting started with the auto sequence. We could not get a ready light. In fact, we tried, finally, just flying in order to orbit to the point 1 that you see there on 7-1. Still didn't get it. And then I noticed that on spec 94, the start point was 4, which was from yesterday, of course, when one of the points didn't finish. We had to update that, but it held over from that, but as soon as we put in a start point of 1, of course, everything was nominal, so we're trucking right along now.

CAPCOM Okay Dale. We copy that, and just for your information, on this particular pass we will leave the encryption switch in bypass. We won't be going to the encrypted mode with TDRS.

SPACECRAFT Okay. We understand. Thank you.

SPACECRAFT Houston, CDR.

CAPCOM Roger. Go ahead.

SPACECRAFT Roger. Couple of things that I have been meaning to mention to you, and have failed to, and I just recalled them. One is on the payload bay, on one of the GAS cans on the starboard side, and it's the first one after the heat pipe experiment, one of the, there are pieces of what appear to be blue thermal tape on top of them, and one of these pieces of tape has curled up. It's still attached on one end, but it's essentially curled up. It looks, to me, like probably a thermal

effect, and don't know if it has any impact or not. All the others, we've looked at closely and they are still bonded on.

CAPCOM Okay, Richard. We copy that. We'll look at it, and for your information, we've had the same problem today as we had yesterday, and you can go ahead and recycle the gate valve, and if you could pass up to us the HRM activation time, please.

SPACECRAFT Okay. And Houston, while we're trying to get that, let me pass on another thing that has happened. The last couple of nights, as a matter of fact, I think each night that that we've been up here, sometimes early in our morning prior to wakeup by a couple or 3 hr, we have heard a constant key, or occasional key in what we have thought was UHF, and just a few minutes ago, we heard the same thing where apparently there was an open key for several seconds, and then it would close, and then open again, and finally, we heard a controller, I think, talking. It was a woman controller. The latitude was about 90 east and the longitude was about 9 north. No big deal, but I thought you ought to know about it, and I'll get Dan and find out the HRM time, and we'll get somebody to cycle the gate valve.

CAPCOM Roger. We copy that, Richard, and reconfirm that the one you've been hearing during the evening is 2 to 3 hr prior to your wakeup MET.

SPACECRAFT (Garble). And Houston, the HRM time was 3 days, 4 hr, and 12 min, and - -

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t168j 245:13:00 9/2/83 PAGE 1

SPACECRAFT (Garble) and Houston, the HRM time was 3 days, 4 hours, and 12 minutes, and I cannot pin down, during our sleep period, exactly when the interference was, but I kind of think it was the same, because it sounded the same, and my guess was, it was a few hours prior to our wakeup.

CAPCOM Roger. We copy, Richard. See you at Santiago at 6 plus 50.

SPACECRAFT Okay. See you later.

PAO Mission Control, Houston. Loss of signal at Hawaii on orbit 53. Santiago 20 minutes away. Commander Dick Truly describing observations of a piece of blue thermal tape on one of the lids of Get Away Special cannister. It appears to have curled up and some UHF interference or keying noises on their receivers during the sleep period apparently from airport control towers that use UHF frequencies under their flight path. At 3 days, 6 hours, 30 minutes, elapsed time returning for Santiago in 19 minutes, Mission Control, Houston.

PAO Mission Control, Houston. Acquisition at Santiago.

CAPCOM Challenger, Houston with you at Santiago for about a minute and a half.

CAPCOM Challenger, Houston with you at Santiago for a short pass.

CAPCOM Challenger, Houston with you at Santiago. We're going to probably lose signal. In case you read, we'll see you at Botswana at 7 plus 11.

CAPCOM Challenger, Houston with you at Santiago. How do you read?

PAO Mission Control, Houston. LOS at Santiago. Apparently the voice was going up to the spacecraft and down to the station from the spacecraft but not reaching MCC Houston. But we'll hear from them again at Botswana in 17 minutes. This is Mission Control, Houston.

PAO Mission Control, Houston. After a couple orbits of being out of action, the TDRS ground station currently is receiving Ku-band television from Challenger near the end of the TDRS coverage area.

CAPCOM Challenger, Houston. We're up with you at TDRS.

SPACECRAFT Okay, John. We just put the PFTA in the bay and Richard's fastening down the (garble).

STS-8 AIR/GROUND TRANSCRIPT t168j 245:13:00 9/2/83 PAGE 2

CAPCOM Roger, we copy, Dale, and we have a nice TV picture again from camera Charlie.

SPACECRAFT Okay.

CAPCOM It looks real pretty over the south Atlantic today.

SPACECRAFT Roger, Houston. And I heard all of your calls at Santiago and answered them, but apparently you weren't hearing me.

CAPCOM Roger, Richard. It was a ground configuration problem.

CAPCOM Challenger, Houston. Recycling the vent valve in the WMS didn't do it. We would like you to go ahead and close the vacuum vent valve.

SPACECRAFT Wilco.

END OF TAPE

CAPCOM - - and Challenger, Houston. Recycling the vent valve in the WMS didn't do it. We would like you to go ahead and close the vacuum vent valve.

SPACECRAFT Wilco.

SPACECRAFT (Garble) And Houston, CDR.

CAPCOM Roger, go ahead.

SPACECRAFT Roger. After we went LOS, we toggled the cabin pressure hardware caution and warning. It was indicating 13.9. I looked up the limit and now it's kind of toggling between 13.8 and 13.9. Rather than pump it up right away, I elected to just lower the limit by 1 tenth of a volt and wait to talk to you assuming that you want to do the nominal or pump it up with O2 this evening. But at any rate, the cabin pressure is toggling between 13.8 and 9 and your call on how to pump it up.

CAPCOM Roger, stand by one Richard.

SPACECRAFT And the vacuum vent valve is closed.

CAPCOM And Challenger, Houston. We had intended to tell you to go ahead and pump it up per the normal procedure, but if you're happy to continue having reset your caution and warning as you have that's fine with us and you can go ahead and wait until this evening and then pump it per the normal procedure.

SPACECRAFT Okay. Well, I feel warm now and we're just getting to the end of our RMS work and what I propose is we get the RMS all put to bed and then do it during the, early in the pre sleep.

CAPCOM Roger. We concur, Richard.

SPACECRAFT And I see INCO has camera A. If he can figure out what it's doing, I'd appreciate him telling me.

CAPCOM Okay Dale. Stand by. I'll ask him.

SPACECRAFT And Houston, we're on the way back to ZLV.

CAPCOM Roger that Richard. Thanks.

SPACECRAFT And Houston, CDR. The cabin pressure toggled again. I'm gonna go ahead and pump it up using the main (garble) cabin atmosphere procedure.

CAPCOM Roger, we concur Richard.

CAPCOM And Challenger, Houston. Dale reference your question on the A camera, INCO asked me to pass along to you that

every time he pans it up we get a big reflection, and when we pan it down we get a good picture.

SPACECRAFT Okay. I might have just forgot where I left it. It's not easy like the B and the C cameras to see where they're pointing and figure it out. Thanks alot.

CAPCOM Roger. Evidently, it was left in the pan up and because that's where we're getting the bad picture.

SPACECRAFT Okay, thanks a lot for your help. Let me keep on going and as you see now I have ready to latches and the MPM's, I mean on the MRL's and getting ready to latch them down.

CAPCOM Roger. We copy Dale and we were getting a good picture of it. We're not getting it now.

SPACECRAFT Okay.

CAPCOM And, Dale. We want you to go ahead and press through the timeline. You guys are really doing a super job today.

SPACECRAFT Ended up working out pretty close to on time again today.

CAPCOM Roger that.

SPACECRAFT And I just lost the mid ready to latches. I'll recycle the arm here and get those back.

CAPCOM Okay.

CAPCOM Challenger, Houston. We'll go LOS here at TDRS in the next minute. We'll see you at Indian Ocean in about 4 minutes.

CAPCOM Challenger, Houston with you at IOS for 7 minutes.

SPACECRAFT Okay, John. And if you got good data, could you verify with RMU that we got a good step monitor volt. It's all put to bed.

CAPCOM Roger, stand by Dale. I'll get back to you.

CAPCOM Challenger, Houston. Our data shows that it's all put to bed and very good.

SPACECRAFT Okay, thanks and John, how does the gate valve work now? Does that need to be recycled?

CAPCOM Roger, Dale. Repeat your transmission please.

STS-8 AIR/GROUND TRANSCRIPT t169j 245:13:32 09/02/83 PAGE 3

SPACECRAFT Okay. Roger. We were just wondering if we could recycle the gate valve and then hopefully get back to the nominal configuration with the vent valve open. That is, after we have the cabin repress done.

END OF TAPE



SPACECRAFT Roger. We were just wondering if we could recycle the gate valve and then, hopefully, get back to the nominal configuration with the vent valve open. That is, after we have the cabin repress done.

CAPCOM Stand by one, Richard. Roger, Richard. You have a go to cycle it again. We won't know the results until you open the vent valve.

SPACECRAFT Roger. I'll tell you what. We will finish this cabin repress procedure that we're in; then we'll recycle the gate valve, and if it appears to us that it has been cycled properly, we'll go ahead and reopen the vacuum vent valve and watch it and let you look at it when we come AOS. How's that?

CAPCOM Roger, Richard. That's a good plan.

SPACECRAFT Okay. We'll sure do it. Thanks a lot.

CAPCOM Roger, and just for your information, Richard, we have uplinked three copies of message 34 which is the CAP for tomorrow. If you want more copies, we can send them.

SPACECRAFT Okay. Thanks a lot. We'll take a look.

CAPCOM And Challenger, Houston. On your question on the GAS can - the reflective tape that is a little bit loose - it was on there when it was sent to the Cape. They weren't pulled off. There's no impact with the configuration you have.

SPACECRAFT Roger, understand. Thanks a lot, John.

SPACECRAFT And John, I don't know if you want a detailed summary of RMS OPS later on. All I can say in a quicky here is that everything went nominally. The berth here at the end in (garble) was really easy. It just went right down in there with very few corrections (garble) having to be made. And the crew real nice (garble).

CAPCOM Roger that.

CAPCOM Challenger, Houston. We need a resume on spec 60 on CRT 1.

SPACECRAFT Okay. Just got it.

CAPCOM Challenger, Houston. We have a TIMBU onboard. We need a circ pumps 1 and 3 to GPC, please.

SPACECRAFT Okay, Richard. Getting it now.

CAPCOM Roger, thanks a lot.

STS-8 AIR/GROUND TRANSCRIPT t170j 245:13:52 09/02/83 PAGE 2

SPACECRAFT And we are getting our DAP's reconfig'd after the RMS OPS back to nominal here.

CAPCOM And Challenger, Houston. We were in the wrong DAP here for awhile. As a result, as soon as we get to darkness we would like you to initiate your IMU roll alignment in whatever attitude that you are at.

SPACECRAFT Okay, John. Understand.

CAPCOM Roger, Dale. And we're going LOS here in 10 seconds. We will see you at Hawaii at 7 plus 57.

SPACECRAFT See you at Hawaii.

PAO Mission Control, Houston. Loss of signal at Indian Ocean Station. RMS tucked into its cradle and stowed and the Payload Flight Test Article also in its trunnions and latched in tight. Completing a second day of testing with the remote manipulator arm. Of the quarter of a TDRS pass of a fairly high quality television on the Ku-band antenna. Hawaii up comming in 29 minutes. This is Mission Control. Day 3, 7 hours, 27 minutes.

PAO Mission Control, Houston. Acquisition through Hawaii and possibly lockup with TDRS shortly up comming.

CAPCOM Challenger, Houston with you at Hawaii for 6 minutes and we'd like you to verify that circ pump number 3 is in GPC, please.

SPACECRAFT Only circ pump 1 is in GPC. Circ pumps 2 and 3 are off.

CAPCOM Roger. We would like you to have put circ pump 3 to GPC, please.

SPACECRAFT Okay.

CAPCOM And for your pre-sleep...

SPACECRAFT And sorry for all that confusion that last pass or two John. So many things were going...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t171j 245:14:29 09/02/83 PAGE 1

SPACECRAFT Only circ pump 1 is in GPC. Circ pumps 2 and 3 are off.

CAPCOM Roger. We would like you to have, put circ pump 3 to GPC please.

SPACECRAFT Okay.

CAPCOM And for your presleep (garble) - -

SPACECRAFT And sorry for all that confusion that last pass or 2, John. So many things were going on that; however, I think they're all squared away now. We had the roll STAK track align that was initiated from the LVLH attitude and, very quickly here, we're going to go to A AUTO VERN.

CAPCOM Roger that.

SPACECRAFT Also, we got the limits set, I think, in the C&W, and we got the cabin pumped up. We cycled the gate valve and opened the vacuum vent. I checked the DP/DT prior to, and after opening the vacuum vent, and as far as I can tell, it is closed; however, EECOM, I'm sure has better data than I do.

CAPCOM Roger, Richard. We copy that, and I have two quick flight notes for you for your presleep activities.

SPACECRAFT Okay. Standby just 1, please.

CAPCOM Okay.

CAPCOM And Richard, to answer your question, your WCS configuration looks good and your cabin press good, and a reminder for you'll to take the encryption select to bypass here at AOS Hawaii.

SPACECRAFT Okay. It is in bypass, and we're standing by for your notes.

CAPCOM Okay, Richard. On the first note, for your supply water dump this evening, dump tank BRAVO to 30 percent.

SPACECRAFT Roger. Understand, tank BRAVO to 30 percent.

CAPCOM Roger, and for the CRYO tank reconfig, we would like the O2 and H2 tank 3 heaters A and B, all four to auto.

SPACECRAFT Roger. That's done.

SPACECRAFT And, John, MS1. If you just tried to send a teleprinter message, I looked in there and the paper had - - I didn't put it on tight enough the last time, and it came off the reel, so you'll have to send that one again.

CAPCOM Roger. We copy. That was a weather message. We'll do that, Dale.

SPACECRAFT Okiedoke. Thank you.

SPACECRAFT And Houston, Challenger. Do you have anything else for us? I got something for you.

CAPCOM Only thing, Dan, is right here as we go LOS, encryption select to TR please.

SPACECRAFT Roger. It's in work.

CAPCOM Ready to copy, Dale.

CAPCOM And Challenger, Houston. We're going LOS. We'll try to handover to TDRS. If we don't get you at TDRS, we'll see you at 8 plus 22, and we would be interested in any comments Dr. Bill in reference to his tests today.

SPACECRAFT Okay. We'll sure do it.

PAO And apparently, we do have TDRS acquisition lockup in progress.

CAPCOM Challenger, Houston with you at TDRS.

CAPCOM Challenger, Houston with you at TDRS. How do you copy?

CAPCOM Challenger, Houston's with you at TDRS.

SPACECRAFT Houston, Challenger copies.

CAPCOM Roger. We read you loud and clear as well, Dale.

SPACECRAFT Okay, John.

SPACECRAFT And Houston, CDR.

CAPCOM Roger. Go.

SPACECRAFT Roger. Bill is down in the airlock doing an audiometry test with Guy, and I didn't want to disturb them. What time would you like to have - - would it be convenient for him to give you a summary this evening?

STS-8 AIR/GROUND TRANSCRIPT t171j 245:14:29 09/02/83 PAGE 3

CAPCOM Richard, we have nothing else that we require this evening. We'll standby for when you're ready to pass it down to us.

SPACECRAFT Okay. Well when they're through, I'll let Bill know, and then as soon as he's ready, we'll just come up and be sure and do it before we go to bed.

CAPCOM Yes sir. That'll be good.

SPACECRAFT John, I got something on HRM for you.

CAPCOM Roger. Go ahead.

SPACECRAFT Okay. The one we started this afternoon, when I went to get the data - - took it out of the box and instead of having 105 in the window, it was showing all 8's, so I continued on through the procedure to check the data and only the first channel had data in it and tha - -

END OF TAPE

CAPCOM Roger. Go ahead.

SPACECRAFT Okay. The one we started this afternoon, when I went to get the data - - took it out of the box and instead of having 105 in the window, it was showing all 8's, so I continued on through the procedure to check the data, and only the first channel had data in it, all everything else was zero. So, then I went back to the first channel, and when it got to the high voltage part of that procedure, it wouldn't get above 4,000. It stayed around 20, or so. So, then I went back and turned it completely off and tried again, and that try, it checked out good, and activated good, and was coming up through channel 5 when I left it, so, I put it back in, and that one was activated at 7 hr and 44 min.

CAPCOM Roger. We copy, Dan, and thanks a lot for the good report on that.

SPACECRAFT And, John, for your info, we also got all the cabin measurements taken today, all the gaps on all the lockers, the (garble) of the lockers, and the tape measurements. They're all complete.

CAPCOM Roger. Thank you, Dale. Good show.

SPACECRAFT Houston, CDR.

CAPCOM Roger. Go.

SPACECRAFT Roger. Wonder if you'd get GNC to let me know what he'd like to do with the IMU alignment, and if you concur, anytime I'm ready to maneuver to the EOIM attitude.

CAPCOM Roger. I'll check with him, Richard.

SPACECRAFT Okay.

CAPCOM And, Richard, you can torque STARS 57 and 18, and start the maneuver now.

SPACECRAFT Okay. Both of those will be in one.

CAPCOM Roger. Thank you, Richard. And for your information, your state vector is go for the next PLS on REV 65, TIG equals 4 days, 00 hr, 55 min.

SPACECRAFT Roger. Understand. Thanks a lot.

CAPCOM Yes sir, and if you'll would let us know when the teleprinter is cleared, we would appreciate it.

STS-8 AIR/GROUND TRANSCRIPT t172j 245:14:40 09/02/83 PAGE 2

SPACECRAFT It's okay now. You can go ahead and resend the message.

CAPCOM Thanks a lot.

CAPCOM Challenger, Houston. We're with you with TDRS again, and I have a couple of notes for you.

SPACECRAFT Standby John. Richard's getting out his paper.

We'll standby.

SPACECRAFT Okay, John, I'm ready to copy, and be advised, at least temporarily, I've had to up the TP 02 limits to 3.6, just because the alarms were toggling. Go ahead.

CAPCOM Roger, Richard. You guys are really sharp. That's what we were going to suggest to you, so you're way ahead of us.

CAPCOM And I have another note for you, Richard. Reference your WMS.

SPACECRAFT Roger. Go ahead.

CAPCOM Okay, Richard. Basically, you have the option whether or not to go ahead with a little cleaning procedure I'm going to suggest to you, here. If you want to do it tonight, you can. If you don't, you don't have to. In any event, whether you do or don't do the procedure, we want you to definitely leave the vacuum vent valve closed for this evening's sleep period.

CAPCOM And you're vacuum vent (garble) - -

SPACECRAFT Roger. Understand, John. Go ahead.

CAPCOM Okay. And your vacuum vent valve is open right now. What we wou - - if you want to do the cleaning procedure this evening, what you can do is use the personal hygiene hose to clean the transport 2, and then you can use a wet wipe and the personal hygiene hose to clean the O-ring in the gate valve area, and then go ahead and cycle the gate valve a few times to dislodge and debris around the O-ring.

END OF TAPE

CAPCOM Then, when you're finished with all of that, close the vacuum vent valve.

SPACECRAFT Roger. We'll elect to close the vacuum valve, and probably not do that tonight.

CAPCOM Roger that.

SPACECRAFT John, this EOIM attitude is unbelievable. I'm sitting up in the CDR's seat, and I feel like I'm gonna fall straight down. Roger. We copy, Richard. That was something that Carol sent up to let you find somebody to hold onto, and just for your information, Richard, since you've elected to go ahead and use the - - just go ahead and close the vacuum vent valve for the evening, just be advised, you can go ahead and use the system per the normal procedure, except leave the vacuum vent valve closed.

SPACECRAFT Roger. Understand.

CAPCOM Challenger, Houston with you for a last couple of messages before we stop talking to you tonight.

SPACECRAFT Roger. Standby.

SPACECRAFT Roger, John. Go ahead.

CAPCOM Okay, Richard. First of all, just to let you know, your configuration for sleep looks really good to us, except for the water dump and the normal presleep activities which you will be doing in the next hour or so. Secondly, if you hear the teleprinter running during the next REV, we will be uplinking the final details of the 2 STAR tracker tests you will be doing tomorrow, just in case you want to look at them this evening. You don't have to. Your choice. And a final note, the entire MOCR team certainly passes on congratulations to everyone up there for the super work you'll be doing today. You're really staying with the timeline, and keeping up with everything that we're asking you to do, so, congratulations for a job well done again.

SPACECRAFT Well, thank you, John. I would appreciate it if you would send those STAR tracker details up and we will look at them this evening. I was under the impression we would have another pass or two, and I had told - - I mentioned to Bill that - - and he was planning on giving you a summary, but I don't think he's prepared right this moment.

SPACECRAFT Roger. And Richard, we are going to be listening to you and hanging right with you, so, whenever you want to do that, that's fine with us. We just won't call you.

STS-8 AIR/GROUND TRANSCRIPT t173j 245:15:97 9/2/83 PAGE 2

SPACECRAFT Okay. How long do we have on this TDRS pass?

CAPCOM Roger. We still have 6 min, and if you want, I'll check in with you with AOS/LOS calls.

SPACECRAFT Yeah, I wish you would for at least another 45 min or an hr.

CAPCOM Yes sir. I will do that, Richard, until you tell me that you'll are ready to stop.

SPACECRAFT Okay. Super. Thanks a lot.

CAPCOM Yes sir.

CAPCOM Challenger, Houston. We're going LOS TDRS. A reminder to put your encryption select to bypass. We will see you at Guam at 9 plus 20.

SPACECRAFT See you then.

PAO Mission Control, Houston. Loss of signal through the Tracking Data Relay Satellite, on orbit 54. Just starting across the equator to begin orbit 55, where orbit counts begin. Next station in 28 min is Guam. We're likely to have a report from Dr. Bill Thornton, just prior to the beginning of sleep period, on some of his medical experiments. Commander Dick Truly asked that MCC stay in contact with the crew, even though at this time they should be in their late presleep period. At 3 days, 8 hr, 52 min elapsed time. Mission Control, Houston.

END OF TAPE

PAO At 3 days, 8 hrs, 52 min elapsed time, Mission Control, Houston.

PAO Mission Control, Houston. We have acquisition through Guam for about 4 min.

CAPCOM Challenger, Houston's with you at Guam for 4 min. And just a reminder to put the startrackers back to the track mode.

CAPCOM Challenger, Houston. We'd like you to verify that you have the encryption select switch in bypass.

CAPCOM Challenger, Houston's with you at Guam for 3 and a half minutes. Just a reminder to put the startrackers to the track mode and verify that the encryption select switch is in bypass.

CAPCOM Challenger, Houston. How do you read?

SPACECRAFT Houston, Challenger. Loud and clear. How are we?

CAPCOM Roger, Richard, you're loud and clear. We're with you at Guam for 2 min. Just a reminder to put the startracker to the track mode and verify that the encryption select switch is in the bypass.

SPACECRAFT Wilco. And Houston, Challenger, every time - in this attitude, we're sitting out here watching the tops of the OMS PODS glow like a firecracker, particularly after each jet firing. That's visually.

CAPCOM Roger, we copy that, Richard.

SPACECRAFT And, John, how long is it till next pass?

CAPCOM Roger, we have 55 sec left on this pass.

SPACECRAFT I see. How long is it till the next pass?

CAPCOM Roger, the next one would be Santiago at 9 plus 57 or TDRS in 12 min.

SPACECRAFT Okay. Call us when we go TDRS and Bill will give you his report.

CAPCOM Roger, that.

CAPCOM And Richard, if you could verify for us, please, and cycle if you have to the encryption select switch to bypass.

SPACECRAFT Okay, it was there, but I took it back to TR and back to bypass.

CAPCOM Thank you. We show it clear now, Richard.

CAPCOM And we're going LOS. I'll give you a call with TDRS in 15 min.

SPACECRAFT Okay. See you then.

PAO Mission Control, Houston. Loss of signal at Guam. Next data acquisition station is Santiago in 32 min; however, we may get TDRS lockup in perhaps 15 min. Bill Thornton still prepared to do an overview of his medical experiments during the day. We'll return at whichever site comes up first. This is Mission Control, Houston.

CAPCOM Challenger, Houston's with you at TDRS.

SPACECRAFT Okay, John, and if you standby, I'll get Doctor Bill up here to give you his report.

SPACECRAFT Houston, how do you copy, Challenger?

CAPCOM Roger, loud and clear.

SPACECRAFT Here's Bill.

END OF TAPE

SPACECRAFT....Do you copy Challenger?

CAPCOM Roger, loud and clear.

SPACECRAFT Here's Dale.

SPACECRAFT Houston, MS 3 radio check.

CAPCOM Reading you loud and clear Dr. Bill.

SPACECRAFT Okay, John. You might pass following along that the fluid study was continued, including sample collection and processing fairly routinely. We did pre and postsleep leg volumes on everyone, threshold audiometry on most of the crew. We did three audio evoked potentials, one visual evoked potential, three EOG's. I'll give you - I'll repeat the times on those which I passed down earlier. Checked out the gyroscopes successfully, quite successfully. Continued a study on GI sounds and motility, did visual acuities and heights, and physicals. All of the equipment is working, working quite well, except for that one graphic recorder which just plain failed - the paper drive failed completely on it. So, I am having to do some things in the blind. Stand by one, and I'll give you times on the EOG's that should have been dumped down.

CAPCOM Okay. Bill, we're standing by.

SPACECRAFT Okay. The start time on the first one was day 02, 20 hrs , 40 mins. It was finished at 56 mins. The second one, the start time was 2 days , 21 hrs , 15 mins. Finish time was 30 minutes. The third one was day 2, 22 hrs , 3 mins start time. Finish time was 9 minutes. I guess we did four. The last one was - 3 days, 6 hrs , 8 mins was the start time. And the finish time was 6 hrs 20 minutes. And, some of these things had some new data in it, which they haven't seen before, so don't let them get upset or disturbed over it.

CAPCOM Roger, we copy that, Bill.

CAPCOM And, Bill, do you have any other thing to report?

SPACECRAFT No. I think that's it.

CAPCOM Okay. We really appreciate the detail of your summary to us, and folks down here are real pleased with all of that. Just one question from us. Do you have any comments at all on the animals?

SPACECRAFT Stand by.

STS-8 AIR/GROUND TRANSCRIPT t175j 245:16:09 09/02/83 PAGE 2

SPACECRAFT John, the first day, they were all asking for their money back on the tickets (laughter), but they seem to have settled in rather nicely since that time. All of them are in excellent condition as far as can be ascertained, eating well, and as far as I can tell, they're giving all indications of being healthy animals.

CAPCOM Roger, we copy Bill. Thank you very much for that qualitative assessment.

CAPCOM And Challenger, Houston. We're interested in whether or not you have received the star tracker procedures messages yet.

SPACECRAFT Roger, John. We heard the teleprinter clicking. Dale is going down there to check. Is it possible on such short notice for you to schedule a very short VTR dump. I was serious about the glow on the tail when the -- when we were in darkness, we could see the OMS pod and tail glowing slightly and . . .

END OF TAPE

SPACECRAFT ...Is it possible on such short notice for you to schedule a very short VTR dump? We, I was serious about the glow on the tail. When we were in darkness, we could see the OMS pod and tail glowing slightly and when the aft vernier jets fired to maintain attitude, this very brilliant glow appeared and a residual glow lasted for some time - or for oh, died off over a period of a minute or so and we put one of them on video tape. We can do more later but we could easily play it to you now or shortly.

CAPCOM Roger, Richard. Start the tape. We're ready to receive.

SPACECRAFT Okay. We weren't prepared for quite such a quick acceptance. If you'll give us a minute or two we'll get prepared and we'll show it to you.

CAPCOM Okay we'll stand by to look for it.

SPACECRAFT Incidentally, the moon was up by the time that we recorded this short tape so you will see some reflection of the moon but - and later on we will, or sometime during the flight, we will get other tapes in complete darkness.

CAPCOM Roger, we copy Richard.

SPACECRAFT And Houston, Challenger. We do have the messages onboard for the star tracker.

CAPCOM Okay. Thanks a lot Richard and we'll continue to stand by for whenever you want to send us the TV picture.

SPACECRAFT Okay John. I think we're set up for a VTR dump. Here goes.

CAPCOM And we're going to go ahead and power down the TAGS.

SPACECRAFT Okay John, are you getting the picture? It should be very faint. It's camera A which is a color camera looking back into the dark payload bay.

CAPCOM Roger, we're getting a bright picture here. Stand by 1 Dale. Our reception isn't real good but we see it.

SPACECRAFT Okay, that's a good picture. You'll see a change here in a bit when the jets fire.

CAPCOM Okay.

SPACECRAFT Oh John, we may have gone by it. Let me rewind real quick and try again.

CAPCOM Okay.

SPACECRAFT It's okay. This will catch it up at the very end of the PFTA berthing. Here we go. It'll be in about 15 or 20 seconds now.

CAPCOM Okay. We're watching for it.

SPACECRAFT Is it firing?

CAPCOM Boy, we see it Dale. That's...

SPACECRAFT Watch for the glow.

CAPCOM Wow, that's something else.

SPACECRAFT And, of course John, you know with the eyeball it's much more impressive than that. The glow lasts much longer than what you're seeing on the video here.

CAPCOM Right. I'll bet it was.

SPACECRAFT We'll try to catch some more in some dark passes.

CAPCOM And Dale, could you just tell us what kind of firings that was again?

SPACECRAFT It was the vernier jet firing - one of the aft vernier jets. We were in the EOIM attitude going payload bay forward, nose toward the earth and the tail up towards deep space and that was just normal (garble) type of vernier firing.

CAPCOM Okay. Thanks a lot for the good report. A lot of people down here are very happy to see that and just a note for you all. If you could just confirm on the WCS and make sure that you get the vacuum vent down to closed, we're showing it's open. And another note, the second burn of the apogee burn of INSAT looked real good and the satellite's almost stationary now.

SPACECRAFT Okay. That's real good news, and we have the vacuum vent switch on our list for presleep. We'll get it John. Thank you.

CAPCOM Okay.

PAO This is Mission Control, Houston at 3 days, 9 hours, 49 minutes mission elapsed time. The Flight Director Jay Greene and the Planning Team have arrived in the Mission Control Center and are now conducting the handover in relief of the Harold Draughon team. That bit of unscheduled downlink television through the TDRS system has been recorded and will be replayed via NASA select later in the day today. It showed STS-8

AIR/GROUND TRANSCRIPT t176j 245:16:15 09/02/83 PAGE 3

PAO.....rather graphically and clearly the glow phenomenon which the crew had described. There have, of course, been earlier reports of the glow phenomenon on surfaces of the Orbiter while in space and those have been recorded on still photography, still photographs, prior to now. This is the first time we've been able to see it in such dimension that it's visible on video and also the first time that it's been correlated to an engine firing...

END OF TAPE



PAO of course been earlier reports of the glow phenomenon on surfaces of the Orbiter while in space and those have been recorded on still photography, still photographs, prior to now. This is the first time we've been able to see it in such dimension that it's visible on video and also the first time that it's been correlated to an engine firing. The glow very dramatically enhanced following the firing of some aft vernier jets and gradually subsided at the termination of those jet firings. And again, that video will be available and distributed via NASA select, later this morning - later in the day today.

SPACECRAFT Houston, Challenger.

CAPCOM Yes, sir. Go ahead.

SPACECRAFT Roger, John. The vacuum vent valve is closed, and I guess, I'd just as soon knock off the comm for this evening unless you--something comes up that we needed, and we got a couple of things to do before we go to bed, and we'll see you in the morning.

CAPCOM Yes, sir, we copy that and just a reminder for you to turn off the HRM, and we will see you in the morning.

SPACECRAFT Roger, that. See you tomorrow.

PAO This is Mission Control, Houston, at mission elapsed time of 3 days, 9 hrs, 51 min. That was the last downlink audio with the crew today, as they enter their sleep period just a few minutes late. Challenger on orbit 55, just approaching the coast of South America at mission elapsed time 3 days, 9 hrs, 52 min.

PAO This is Mission Control, Houston, at 3 days, 9 hrs, 54 min, mission elapsed time. Playback of that unscheduled downlink television is planned to occur at approximately 11:35 a.m. central daylight time, this morning. That's the downlink TV demonstrating--illustrating the glow on the OMS pod and aft end of the spaceship Challenger, and the associated vernier firings. Again, the playback is scheduled to occur on NASA select at 11:35 a.m. central time. At mission elapsed time, 3 days, 9 hrs, 55 min, this is Mission Control, Houston.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, Challenger, Houston.

SPACECRAFT One more question, John. We're just getting ready to do the Ku-band antenna cable reposition, and we noticed you're tracking so we can't do that. You want us to skip it tonight or what do you want us to do here?

CAPCOM Standby, Dale. We'll be with you in about a minute or a minute and a half, Dale, with an answer. Basically we're going to want you to do it...

SPACECRAFT Okay, there's no problem.

CAPCOM We're going to want you to do it, but we're going to tell you when we want you.

SPACECRAFT Okay. Just give us a call.

CAPCOM Okay, you can take it and do it now, Dale.

SPACECRAFT Okay, thanks.

CAPCOM Roger. See you, goodnight.

SPACECRAFT Talk to you tomorrow.

PAO This is Shuttle Mission Control at 3 days, 9 hrs, 56 min, mission elapsed time. We are about 20 min into the crew's sleep period, but that last exchange of air-to-ground had to do with some antenna configuration based on the control center's use of the TDRS and some instructions for the crew and their activity plan to do some antenna configurations and the conflict associated with those, and they obviously did resolve that and the crew should be entering its sleep period about now. At mission elapsed time, 3 days, 9 hrs, 57 min, this is Mission Control, Houston.

PAO This is Mission Control, Houston at 3 days, 10 hrs, 9 min mission elapsed time. Handover has occurred in the Control Center, and Flight Director Harold Draughon, lead flight director for STS-8, is now on duty with his planning team of flight controllers. Correct that to Harold Draughon was relieved by Jay Greene and the change-of-shift briefing with Harold Draughon will occur as scheduled at 12 o'clock noon.

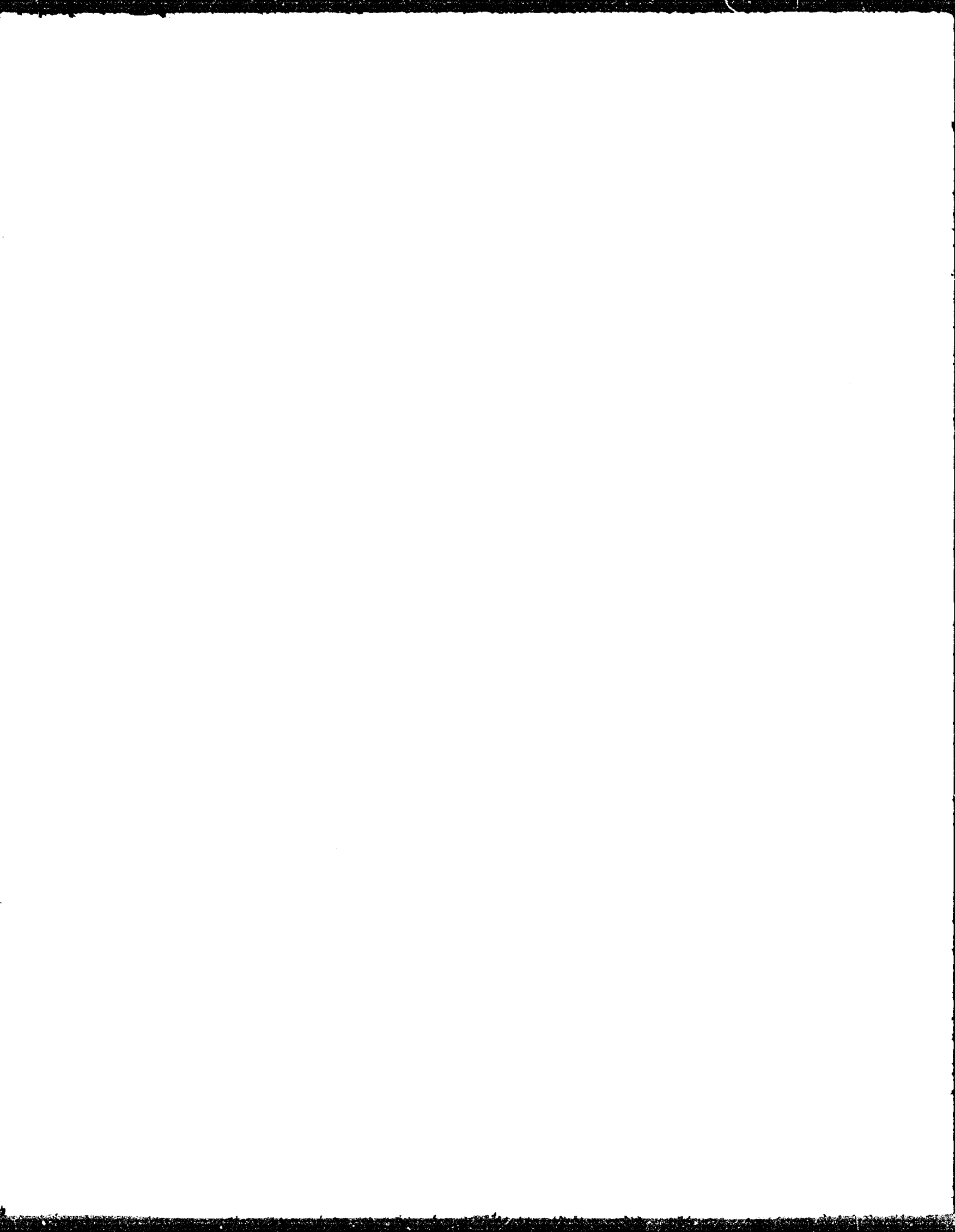
END OF TAPE

PAO Harold Draughon was relieved by Jay Greene and a change-of-shift briefing with Harold Draughon will occur as scheduled at 12 o'clock noon. This is Mission Control, Houston, at mission elapsed time 3 days, 10 hrs, 23 min. A reminder that the change-of-shift briefing with STS-8 lead flight director, Harold Draughon and Robert Allier, the TDRS program manager will occur in approximately 5 min at 12 o'clock noon central daylight time, in the building 2 news center, that's Johnson Space Center, Houston. Change-of-shift press conference, again, scheduled for 12 o'clock noon. This is Shuttle Mission Control.

PAO This is Mission Control, Houston, mission elapsed time is 3 days, 11 hrs, 31 min, we've just acquired signal through the ground station at Santiago, Chile, and, of course, there will be no dialogue with the crew with as much as we're almost 2 hrs into the sleep period, but the flight control team, nevertheless, continues to look at data to assure the onboard systems are performing as expected. Challenger on orbit 56. Data shows apogee 120.4 nautical miles, perigee 119.3 nautical miles orbital period of 1 hr and 29 min and 2 sec. Altitude - latitude is presently 27.0 degree south latitude, 79.4 degree west longitude. Relative velocity 286,131 ft per sec. Temperature in the flight deck is 80 degrees and humidity at 26 percent. And clearly no voice downlink from the crew. Everything, apparently, quiet and the crew is passing an apparently an uninterrupted night. At mission elapsed time, days , 11 hrs, 32 min, this is Mission Control, Houston.

PAO This is Mission Control, Houston, at 3 days, 12 hrs, 32 min mission elapsed time. About 5 hours remaining of the sleep period. Everything is still quiet onboard Challenger. Vehicle is on orbit 57, just passing over Guam and control team is getting data take from downlink telemetry, and all systems onboard the vehicle continue to be healthy.

END OF TAPE



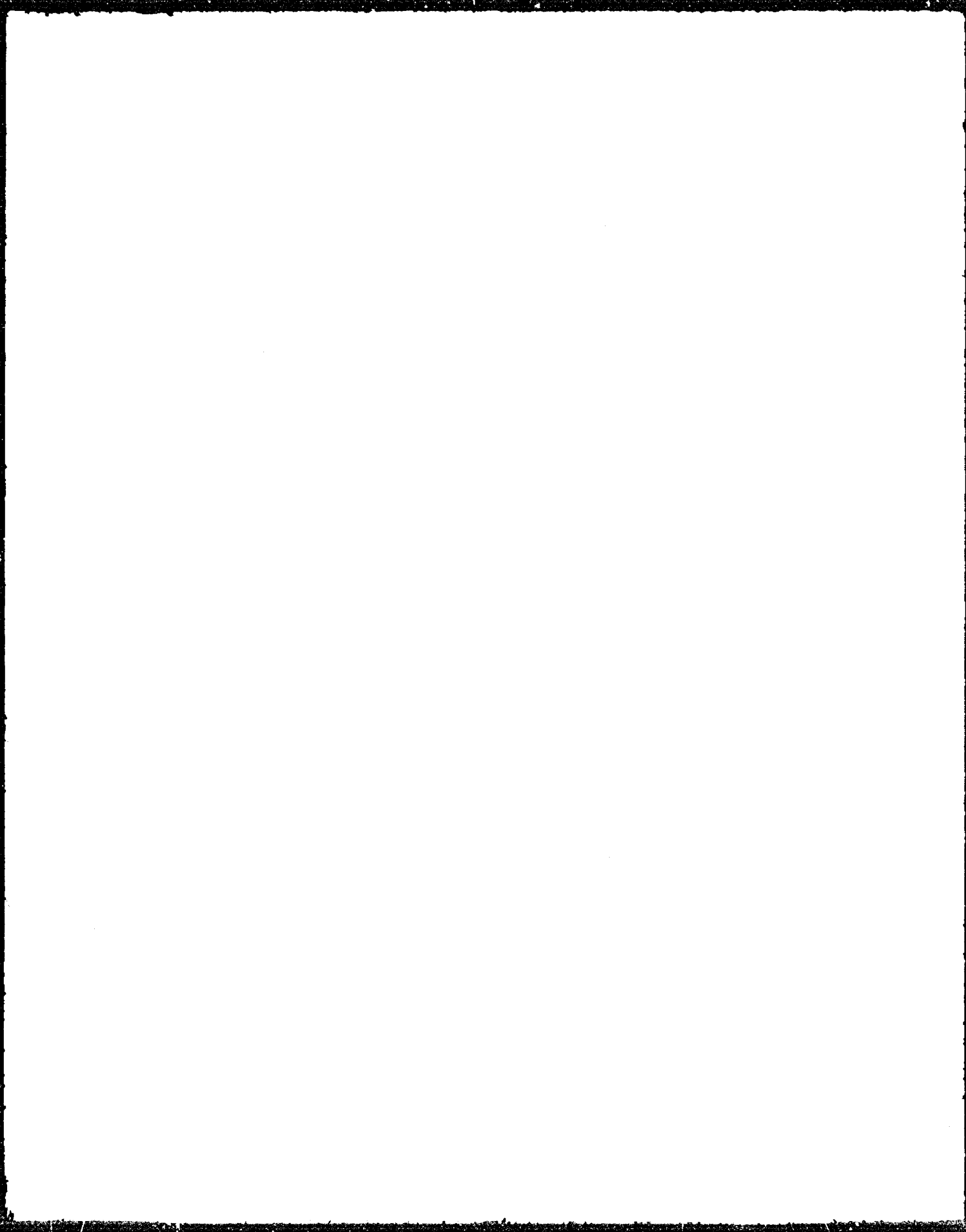
PAO This is Mission Control. Houston, at 3 days 13 hours 30 minutes, mission elapsed time. Challenger is sweeping across North Africa on a trajectory that will carry it almost directly over the Aswan Dam on orbit number 58, having just completed a pass over the ground station at Dakar. Data continues to show that the onboard systems are functioning nominally. No caution and warning alarms have occurred to disturb the crew's sleep, sleep period is about half over at this point. At mission elapsed time 3 days 13 hours 31 minutes, this is Mission Control Houston.

PAO This is Mission Control Houston at 3 days 14 hours 28 minutes mission elapsed time. Challenger over the south Pacific presently on orbit number 59. Everything is quiet onboard the vehicle. We're in the middle of a fairly long loss of signal period and don't acquired data again for another 26 minutes until we pass through the tracking site at Dakar. The crew has 3 hours 15 minutes remaining in the sleep period and everything appears to be quiet onboard the vehicle.

PAO This is Mission Control Houston at 3 days 15 hours 55 minutes mission elapsed time. Just about 2 hours remaining in the crew's sleep period. Challenger is on orbit 60 right now and everything appears quiet in the vehicle.

PAO This is Mission Control Houston at 3 days 16 hours 53 minutes mission elapsed time. Challenger on orbit 60. Just slightly less than an hour remaining on the crew's sleep period and they've passed an apparently uninterrupted night. There's no record of any caution and warning alarms having occurred during the night to interrupt their sleep period. Our intention is to cancel the scheduled 9 o'clock shift briefing with flight director, Jay Greene. If any news media feel that they take exception and do wish to talk to the flight director they should advise the Johnson news room at the earliest opportunity - the news room at the Johnson Space Center. At mission elapsed time, 3 days 16 hours 54 minutes, this is Mission Control Houston.

END OF TAPE



PAO - - at Mission Elapsed Time, 3 days 16 hours 54 minutes, this is Mission Control Houston.

PAO This is Mission Control Houston, 3 days 17 hours 33 minutes, Mission Elapsed Time. Just slightly over 10 minutes remaining in the crew's sleep period. The vehicle is on orbit 61 in the South Pacific presently. There will be an AOS through the Merritt Island land station in about 19 minutes. So we may get some air to ground transmission and a wakeup call at that point. Our intention once again is to cancel the scheduled 9 o'clock change of shift briefing with Flight Director Jay Greene due to the absence of issues or significant activities on his shift. Any news media representatives, however, who take exception to that plan should please notify the Johnson Space Center news room at extension 483-5111 at their earliest opportunity. At Mission Elapsed Time 3 days 17 hours 34 minutes this is Mission Control Houston.

PAO This is Mission Control Houston at 3 days 17 hours 55 minutes. Anticipating AOS through Merritt Island land station in just a few seconds and crew sleep period has expired so we rather expect a wakeup call here momentarily.

CAPCOM Challenger, Houston, on UHF. Challenger, Houston, on UHF.

SPACECRAFT Loud and clear, Houston. How me?

CAPCOM Roger. Got you loud and clear. We had no luck with TDRS this pass and we also have been having a problem with S-band GSTDN over Mila, Bermuda. We've got about a minute and a half to go UHF here and I've got a couple of notes when you are ready to copy.

SPACECRAFT Roger, Bryan, go ahead.

CAPCOM Post-sleep activity, first perform manual cabin atmosphere management by repressing with N2 per the Orbit Ops Checklist, page 5-10. Reminder, do not perform N2 repress concurrent with WCS use. Second, on panel R1, O2 cryo tank heaters A and B 2, to OFF, and the H2 tank 3 heaters A and B 2, to OFF. And finally, dump tank Bravo to 10 percent, should take about 38 minutes. Over.

SPACECRAFT Okay. Page 5-10, repress with N2 is not compatible with WCS operations. Tank 3 heaters are OFF and dump tank Bravo to 10 percent

CAPCOM Roger, and we just got data back and good morning to you.

STS-8 AIR/GROUND TRANSCRIPT t180j 245:23:21 09/02/83 PAGE 2

SPACECRAFT Good morning, Bryan. We've been - Dan and I have been up a few minutes and the other guys, we're getting them up now.

CAPCOM Okay. And, Challenger, Houston, we're about to go LOS we'll see you next at Dakar at 18:06.

SPACECRAFT Wilco. Dakar at 18:06. See you there.

PAO This is Mission Control Houston at 3 days 18 hours 1 minute Mission Elapsed Time. The S-band downlink from the vehicle wasn't received initially through the Mila station because the ground had neglected to command the power amplifiers onboard Challenger to an ON position which would enable that downlink and that's been remedied and the wakeup call was acknowledged by UHF by Mission Commander Richard Truly. That command was sent through the Bermuda station and downlink data was received immediately thereafter. And we have 4 minutes remaining until we reacquire signal and that acquisition will be through Madrid.

END OF TAPE

PAO ...reacquire signal and that acquisition will be through Madrid. This is Mission Control Houston, the next acquisition signal will be through Dakar and it will occur in about 2 and a half minutes, it's an extremely low elevation pass though a maximum elevation during the pass is 1.4 degrees over the horizon so the planning team INCO is not anticipating a very strong signal to the vehicle through this pass. Mission elapsed time is presently 3 days 18 hours 4 minutes, this is Mission Control Houston. This is Mission Control Houston, about 30 seconds away from AOS through Dakar and in the absence of any outcry of concern to the contrary, the scheduled 9:00 change of shift briefing with flight director Jay Greene will be cancelled in as much as there have been no significant events or incidents through the evening and through his planning shift. Flight director Randy Stone and the orbit 1 team of flight controllers have arrived in Mission Control and are tagging up with the off-going flight controllers and preparing for handover. Mission elapsed time, 3 days 18 hours 6 minutes and we should be getting voice momentarily through Dakar, this is Mission Control Houston.

(Wake up music)

CAPCOM Good morning, Dr. Thornton.

SPACECRAFT Dr. Thornton passes his good morning, he's already hard at work in his office.

CAPCOM Roger that, we figured. And Challenger, Houston, this Dakar pass is low elevation, we've got you for about 2 minutes.

SPACECRAFT Okay, well we don't have anything for you and we're just starting into the postsleep procedures.

CAPCOM Roger, Dan we don't have anything, we'll just stand by. Challenger, Houston, we're going LOS, we'll see you next at Indian Ocean at 18:24.

SPACECRAFT See you there.

PAO This is Mission Control Houston, at 3 days 18 hours 11 minutes Mission Elapsed Time, the wakeup call this morning was the University of North Carolina fight song. (Garble) to one of its alumnis, Dr. Bill Thornton. Let's see we've loss signal through Dakar and we will aquire in about 13 and a half minutes through Indian Ocean. This is Mission Control Houston.

(Wake up song)

CAPCOM Challenger, Houston, Indian Ocean for 5 minutes.

SPACECRAFT Roger, Bryan loud and clear.

STS-8 AIR/GROUND TRANSCRIPT t181j 246:00:35 09/03/83 PAGE 2

CAPCOM And we have you the same and we're standing by.

SPACECRAFT Okiedoke. I hear the teleprinter clicking, Bryan, I thought ya'll were out of touch.

CAPCOM And Challenger, Houston, Richard, we're sending a PDRS message for you and also some news.

END OF TAPE

CAPCOM And Challenger, Houston, Richard, we are sending a PDRS message for you and also some news.

CAPCOM Challenger, Houston, we are going LOS. We'll see you next at Yarragadee at 18 plus 40.

SPACECRAFT Roger, Bryan. We'll see you there.

CAPCOM Challenger, Houston, with you at Yarragadee for 5 1/2 minutes.

SPACECRAFT Roger, Houston, loud and clear. I was just reading the world news you sent up to us.

CAPCOM Okay, Richard, got you loud and clear and we're standing by.

SPACECRAFT Roger. Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Roger, Bryan. This particularly attitude looking out these top windows is really spectacular and when we go back in it tonight, I'd like you to tell the earth ops people that we are planning on putting a couple of these Australian passes on TV. It's severe clear across most of western and southern Australia.

CAPCOM Okay, we'll sure tell them that. Challenger, Houston, about to go LOS, see you next at Orroral in just a couple of minutes at 18 plus 49. And an update to the news, the Astros just finished playing again and they beat the Cubs again, 6 to 5 so they are 5 1/2 out.

SPACECRAFT Outstanding. And you can tell ECOM, we're repressurizing with N2 now.

CAPCOM Roger.

SPACECRAFT And Houston, CDR, while we're up and watching things, okay if we reopen the vacuum vent?

CAPCOM Stand by. That's affirmative.

SPACECRAFT Okay.

CAPCOM And we'll see you at Orroral in 2 minutes.

SPACECRAFT Okay and we are planning on doing a cleaning job on the gate valve later on.

CAPCOM Roger.

PAO Mission Control, Houston, 3 days, 18 hours, 47 minutes mission elapse time. Have a brief gap in communications as the Orbiter passes between the stations of Yarragadee and Orroral in Australia. Be picking up again in about a minute, 20 seconds over the Orroral station. We do expect to have communication through the Tracking Data Relay Satellite as we get up on it in about 15 minutes. This is Mission Control.

CAPCOM Challenger, Houston, with you Orroral for 2 minutes.

SPACECRAFT Roger, Houston, loud and clear. Houston, Challenger.

CAPCOM Go ahead.

SPACECRAFT Yes, Bryan. We were kind of expecting prelaunch that on this extra day we were going to do some tail glow and I notice it didn't show up in there and it was so spectacular last night and in fact because we were expecting some we brought an extra roll of film. So I just took inventory. I have 3 rolls of glow experiment film left and I was wondering if during the day you guys could maybe work up a little bit of a plan for tonight after we go into the EOIM attitude that we could just set that camera up and try and invent a better way of positioning it and then just every time we came into night, we could do some tail glow pictures.

CAPCOM Okay, Dan, stand by, we'll talk to you some more about that next time we get you at TDRS.

SPACECRAFT Okay, there's no rush we got until tonight but it was just something I was thinking about.

CAPCOM Okay, we're about to go LOS, we'll see you at TDRS at 19:03 and if that doesn't work, Mila at 19:23.

SPACECRAFT Okay, we'll be ready.

CAPCOM And the next people you talk to will be the Orbit One Team. Have a good day.

SPACECRAFT Bryan, I'd like to commend your shift to all the guys that have been working on it. The way that you guys have got us started every morning has been absolutely outstanding and we really appreciate it.

CAPCOM Okay, I guess you're not holding the fact that it took us 7 tries to get the music up this morning against us.

SPACECRAFT (Chuckle), like the trap.

STS-8 AIR/GROUND TRANSCRIPT t182j 246:01:00 09/03/83 PAGE 3

PAC Mission Control, Houston, we have loss of signal through Orroral. We'll pick up the spacecraft again in about 11 minutes when we get within the range of the Tracking Data Relay Satellite.

END OF TAPE



PAO Mission Control Houston, we have loss of signal through Orroral. We'll pick up the spacecraft again in about 11 minutes when we get within the range of the Tracking Data Relay Satellite. That comes about, on this pass at about a 168 degrees west longitude. On the last part of orbit number 61 and the crew is reviewing their teleprinter messages, getting ready for the day's activities. Payloads Officer here in Mission Control report that the second firing of the apogee kick motor on the INSAT, that is the final burn of that rocket motor to circularize the orbit of the Indian National Satellite was successful. That occurred about 11 hours ago. That was a 24-minute and 45-second long burn. In about another 12 hours, 12 and a half hours the controllers at the payloads command center in India for the satellite will deploy the solar array on the satellite to its full up position and it should be in business once it drifts to its final location. Mission Control Houston, 3 days 19 hours 17 minutes, Mission Elapsed Time, Challenger on orbit number 62. We did not end up getting use of the TDRS this time, White Sands having a ground problem. We will acquire over the Mila station in about 6 and a half minutes, this is Mission Control Houston.

CAPCOM Challenger, this is Houston, with you over the states for 10 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM You're loud and clear too, Richard, good morning.

SPACECRAFT Good morning, Mary, how are ya'll doing this morning? Or is it this evening?

CAPCOM Well, now it's the morning, we've all switched over and we're doing real well, sounds like you are too.

SPACECRAFT You bet, we just started the roll star track align from the EOIM attitude and everything's looking good onboard. We're just getting ready to eat a little breakfast.

CAPCOM Well have a good breakfast and we'll try not to bother you.

SPACECRAFT Okay, things are going good onboard this morning, we're all set. Hey, Mary, what time is it in Houston?

CAPCOM It's 20 58, local.

SPACECRAFT Okay, thanks.

CAPCOM And for Dan, we have a, Jeff has a little discussion set up on the glow photography and any time he's ready today, Jeff will do a data dump with him.

STS-8 AIR/GROUND TRANSCRIPT t183j 246:01:24 9/3/83 PAGE 2

SPACECRAFT Okay, he said he'd catch him after breakfast if that's alright.

CAPCOM That's fine, anytime he's ready.

SPACECRAFT Houston, CDR, looks like PP02 sensor bravo is acting up again and its just bumping the 3.6 limit.

CAPCOM Roger, Dick, ECOM confirms that, but he thinks it'll settle out.

SPACECRAFT Okay, we'll just keep an eye on it and not do anything. Houston, CDR.

CAPCOM This is Houston, go ahead.

SPACECRAFT Yes, just thought I'd make the comment to you, that as we're in this roll startracker alignment the glow even though there are no jets firing right now - off in the flight deck and looking at the tail of the Orbiter, the glow is moving around as the velocity (garble) moves around. It's unlike the glow that we saw when we were in the EI, EOIM attitude.

CAPCOM That sounds amazing.

SPACECRAFT It really is and it's easily visible to the naked eye.

CAPCOM Okay, Richard, we copy that thanks.

END OF TAPE

SPACECRAFT Houston, Challenger.

CAPCOM Houston, go ahead Challenger.

SPACECRAFT Mary, this is Thornton, could you pass a couple of messages along for me?

CAPCOM Sure could, Bill, if they aren't too long, we're about a minute and a half from LOS, but go ahead.

SPACECRAFT Okay, Dr. Tom Moore, ask if he can find where the spare eye/hand tapes are stowed also to determine if the sound pressure level meter is onboard, the noise meter is onboard, and finally you might advise Dr. Young that the contact lens are in and I'm trying to make it stick.

CAPCOM Okay, fine, we'll pass those on.

SPACECRAFT Thank you.

CAPCOM And Challenger, this is Houston, we're 30 seconds LOS, we'll talk to you again through Dakar at 19 plus 39, that's about 5 minutes.

SPACECRAFT Okay, thank you.

PAO Mission Control Houston, 3 days 19 hours 35 minutes, Mission Elapsed Time, Challenger is out of range of the Bermuda tracking station. We'll be picking up again in about 4 minutes and 45 seconds through the Dakar station. We still do not have use of the tracking data relay satellite due to ground station problems at White Sands. During that recent pass over part of the tracking stations in the continental United States, the crew reported that they were about to have breakfast, Commander Dick Truly made some observations on the tail glow. Previous crews doing photography out the back windows reported a glow around the Orbiter's vertical tail fin and it was determined that that was due to the impact of random oxygen molecules of even up at the altitudes that the Orbiter flies are a few oxygen molecules floating around up there and when they strike the surface of the vehicle at the speeds that it is going, that they cause a glow. Up at the higher orbits that's not normally visible to the naked eye and they record that on film with the long exposures but the Orbiter's now at an orbit of actually less than a 120 nautical miles. Normally the spacecraft in the recent missions have been flying at about 160 nautical miles and we reduced the orbit specifically yesterday to take advantage of the greater abundance of some oxygen molecules at this altitude for a materials test in the cargo bay. Truly reported that the tail glow was visible even to the naked eye, quite easily visible at this altitude because of the greater abundance of the oxygen molecules there. Also heard from Dr. Bill Thornton with some

STS-8 AIR/GROUND TRANSCRIPT t184j 246:02:04 09/03/83 PAGE 2

questions about where some of his medical equipment is stowed onboard the Orbiter. We'll be picking up in about 2 and a half minutes through the Dakar station. One quarter of the way through orbit number 62 on this, the fifth flight day that is of Space Shuttle flight 8. 3 days 19 hours 37 minutes, this is Mission Control. Mission Control Houston, standing by for acquisition through the Dakar station.

CAPCOM Challenger, this is Houston, with you through Dakar for 4 minutes.

SPACECRAFT Okay, Mary, loud and clear.

CAPCOM You too, Dick, have a nice breakfast.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t185j 246:02:12 09/03/83 PAGE 1

CAPCOM You too, Dick. Have a nice breakfast. Challenger, this is Houston, we're 30 seconds LOS from Dakar. We'll be handing over to TDRS.

SPACECRAFT Okay.

CAPCOM Challenger, this is Houston with you through TDRS.

SPACECRAFT Roger, Houston, you're loud, you're broken up just a little bit but we understood you.

CAPCOM You're loud and clear.

CAPCOM Challenger, Houston, we're 10 seconds LOS and we'll talk to you in 4 minutes through IOS.

PAO This is Mission Control, Houston. We had a short period of time where we had contact with the spacecraft through the use of the Tracking Data Relay Satellite. We've now passed out of the range on the eastern end of the reach of that satellite and the Challenger will be communicating to Mission Control through the Indian Ocean Station in about 2 1/2 minutes. Three days, 19 hours, 55 minutes mission elapse time, this is Mission Control, Houston.

PAO Mission Control standing by for acquisition through Indian Ocean Station.

CAPCOM Challenger, this is Houston with you through Indi for 6 minutes.

SPACECRAFT Roger, Mary.

CAPCOM And Challenger, for Dr. Bill, we've talked to Tom Moore and there should be spare tapes, eye/hand tapes in MF-57 hotel and we're still working on your other questions.

SPACECRAFT Okay, MF-57 hotel and still working on the sound (garble) meter. Thank you.

CAPCOM And Challenger, Houston. We see stars 43 and 37 in your table and they're good so you are go to do your align at any time at your convenience.

SPACECRAFT Okay, Mary, thanks very much. These startrackers are really working 100%, aren't they?

CAPCOM Well, they seem to be looking real good.

SPACECRAFT Mary, reading the morning mail here, I see that under failures, impacts, etc., you have end effector snares out of the grooves. Did you guys see that last night when you were

STS-8 AIR/GROUND TRANSCRIPT t185j 246:02:12 09/03/83 PAGE 2

using camera B to look into the end effector or how do we know that?

CAPCOM I think we've been noticing that for a couple of days but we'll check on that and get an answer for you, Dale.

SPACECRAFT Okay, no hurry.

CAPCOM Challenger, this is Houston. We're 30 seconds LOS, we'll talk to you again through Yarragadee at 20:14.

SPACECRAFT Roger, and the alignment's in work.

CAPCOM We copy that, Richard.

PAO Mission Control, Houston, 3 days, 20 hours, 6 minutes mission elapsed time. Challenger is out of range of the tracking station at Indian Ocean Station and we'll be picking up again in about 7 minutes over Yarragadee in western Australia. The crew is beginning to get into their business activities this morning, having had breakfast. Mission Control Capcom, Mary Cleave passed up word to the crew that they have 2 stars available to allow their startrackers to work with, part of the navigation system on the Orbiter. These startrackers are essentially optical devices that - -

END OF TAPE

PAO The crew is beginning to get into their business activities this morning having had breakfast. Mission Control Capcom, Mary Cleave passed up word to the crew that they have 2 stars available to allow their startrackers to work with, part of the navigation system on the Orbiter. These startrackers are essentially optical devices that lock onto stars. They try to pick 2 stars ideally about 90 degrees apart. And those are used for determining the attitude of the Orbiter measuring the angles between those 2 stars. And then that information is used for the inertial measurement units which also help to determine Orbiter position. The ground also passed up word to Dr. Bill Thornton on where they believe some of his medical equipment is stowed away. There are quite a number of stowage lockers on the Orbiter in the middeck area, quite a lot of equipment stowed in those and everything from clothing to food to supplies, flight data file books, experimental equipment and it's very easy to see how it would be difficult to find some things if you didn't know exactly where to look for it. We're still about 5 minutes from picking up communication again through Yarragadee, 3 days, 20 hours, 9 minutes mission elapsed time, this is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you through Yarragadee for 7 minutes.

SPACECRAFT We're still here, Mary.

CAPCOM That's good to hear, Dale. Challenger, this is Houston, Dr. Bill, sorry to say the sound pressure meter is not onboard that you queried about earlier and we'd like to verify that that sound pressure and noise meter was just one meter that you were questioning.

SPACECRAFT That's right, that was, that's what he had meant to say, Mary. Thanks for checking.

CAPCOM Okay, thanks. Challenger, this is Houston, we're 30 seconds LOS, we're going to lose you here for 2 minutes as we hand over to Orroral.

SPACECRAFT Roger, Houston.

PAO Mission Control, Houston, 3 days, 20 hours, 22 minutes mission elapsed time. Challenger in the gap between Yarragadee and Orroral on orbit #62. During conversation with the crew there, the Capcom Mary Cleave relayed the message that a particular piece of equipment that Dr. Bill Thornton was looking for had not been placed onboard. Sometime before the flight, someone remarked that given that the second Tracking Data Relay Satellite that was originally part of the cargo of this flight was deleted and its 47,000 lb weight no longer onboard that would make room for 47,000 lbs of Dr. Bill Thornton's medical equipment. Apparently he has quite a bit onboard but this one

STS-8 AIR/GROUND TRANSCRIPT t186j 246:02:31 09/03/83 Page 2

piece didn't make it. We're standing by for acquisition through Orroral in about 25 seconds, this is Mission Control.

CAPCOM Challenger, Houston with you through Orroral for a minute.

SPACECRAFT Roger, loud and clear, Mary.

CAPCOM You too, Dan. Challenger, this is Houston, we're 30 seconds LOS. We'll speak to you again through TDRS at 20 plus 38, if not through Mila at 20 plus 58.

SPACECRAFT Okay, we'll be looking for you at one of those places.

PAO This is Mission Control. Challenger out of range of the Orroral Station. We may pick up communication again in about 13 minutes through the Tracking Data Relay Satellite. If all the ground station operations are working properly, if not it'll be about 33 minutes before we reacquire communication over the Continental United States, the Mila station. Three days, 20 hours, 25 minutes, this is Mission Control, Houston.

END OF TAPE

CAPCOM Challenger, this is Houston, with you through TDRS.

SPACECRAFT Roger, Houston, read you loud and clear.

CAPCOM You're loud and clear too.

PAO This is Mission Control, we are getting data through the Tracking Data Relay Satellite.

CAPCOM Challenger, this is Houston for Dale, the (garble) has a little note for you, he says you still have two smears out of the groove on the RMS and it has not changed since flight day 2, they were able to take a good look at it yesterday through camera bravo.

SPACECRAFT Roger, thank you, Mary. Also, Mary, we ended up cleaning the WCS this morning and the vacuum vents is open.

CAPCOM Okay, we copy that.

SPACECRAFT Houston, Challenger, comm check from the middeck.

CAPCOM Read you loud and clear, Dale. How me?

SPACECRAFT Okay, have you the same, thank you.

CAPCOM Challenger, this is Houston, we're sending you an update on your state vector.

SPACECRAFT Okay, Challenger copies.

PAO Mission Control Houston, 3 days 20 hours 56 minutes Mission Elapsed Time. We're still getting data and voice through the Tracking Data Relay Satellite and we are about to pass over the ground stations through the Continental United States very shortly although we'll continue to maintain the link with the TDRS. The commander and the pilot very shortly will be engaged in the test of the startracker referred as the startracker acquisition test. As we mentioned earlier these pieces, two pieces of equipment two startrackers in the forward area of the Orbiter that are electro optical devices that are used to lock on to star pairs for navigation purposes. It helps the Orbiter avionics know where the vehicle is in combination with the inertial measurement units that are also part of the navigation system. Following that test, shortly thereafter, will be the startracker horizon limit test. That test is designed to demonstrate the ability of the startracker to track a star closer than 20 degrees to a sunlit Earth horizon. The crew is fairly quiet this morning, just going about their duties. Dr. Bill Thornton already busily working with his medical objectives, his research into the data about how astronauts in space are affected by weightlessness, something commonly referred to space motion

STS-8 AIR/GROUND TRANSCRIPT t187j 246:02:57 09/03/83 PAGE 2

sickness but really a broad range of things that can happen to an individual we call space adaption syndrome. The agency is diligently engaged in research now to overcome the problems of the space adaption syndrome which can affect crew performance on short term flights. Challenger on orbit number 63 at the present time. At 3 days 20 hours and 59 minutes into flight the of STS-8, this is Mission Control Houston.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT Mary, it's MS3 again, could you pass some more messages along for me?

CAPCOM Sure will.

SPACECRAFT Tell Dr. Young, the contact lens went in without difficulty - -

END OF TAPE

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT Mary, it's MS3 again. Could you pass some more messages along for me?

CAPCOM Sure will.

SPACECRAFT Tell Dr. Young that the contact lens then went in without difficulty that have made repeated applications of it and have tried every application of sterile water that we can think of but that we cannot make it stick - we cannot make it stick. I feel the pressure of the lens when the water is applied but it simply won't stick. And if he has any suggestions we're open. I've worked with it now for almost 2 hours.

CAPCOM Sounds like you are giving it a good try and we'll try and get ahold of him and get some answers for you.

SPACECRAFT Thank you much. And, Mary, MS3 again. You might point that we have tried all of the various applications of water from a drop at the time to filling the entire orbit.

CAPCOM Okay, Dr. Bili, we copy that and we'll pass it along.

SPACECRAFT Thank you again.

PAO Mission Control Houston, 3 days 21 hours 19 minutes Mission Elapsed Time. We're still getting data through the Tracking Data Relay Satellite and have our voice communications through that system as well. Challenger on orbit number 63 out over the western edge of Africa at the present time. A few minutes ago we had a report from Dr. Bill Thornton asking to relay a message to one of the research physicians here on the ground with reference to a contact lens he was having difficulty with. The lens is not a prescription-type lens for Dr. Thornton but it is a specially designed lens with markings on it which is to be used in a Spacelab experiment coming up on STS-9 and that lens will help in recording eye movements. That is the rotation of the eye within the socket, part of the Spacelab experiments coming up late October, late November. And Dr. Thornton is assisting in checking out that lens. He reported he is having difficulty getting it in place. The crewmembers still busily engaged in their timeline activities, mostly getting set up for the day's business. The pilot and the commander, Pilot Dan Brandenstein and Commander Richard Truly will shortly be engaged in the startracker acquisition test followed by startracker horizon limit check.

STS-8 AIR/GROUND TRANSCRIPT t188j 246:03:44 9/3/83 PAGE 2

CAPCOM Challenger, this is Houston, with some talk about the WCS.

PAO This is Mission Control, we have lost our lock, communications link to the Tracking Data Relay Satellite just a few moments ago. So we don't have our connection to the Orbiter at this time. We or may not get that back before we have loss of signal in about 7-1/2 minutes as we get out of the range of the Tracking Data Relay Satellite. We would then pick up again over the Indian Ocean Station in about 12 minutes from now. This is Mission Control.

PAO Mission Control, 3 days 21 hours 23 minutes and we have reacquired through the Tracking Data Relay Satellite again.

CAPCOM Challenger, this is Houston, with some discussion about your cycling the gate valve again.

SPACECRAFT Roger, here's Dale again.

CAPCOM Yes, the cabin - -

SPACECRAFT Go ahead, Mary.

SPACECRAFT Okay, Dale. The cabin is still losing pressure at a rate of about 2 to 3 pounds per hour and the IFM you performed this morning didn't seem to help but cycling the gate valve yesterday did. So we would like you to go ahead and cycle that gate valve again.

SPACECRAFT Okay. We'll do it right now.

CAPCOM Thanks.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead, Dan. This is Houston.

SPACECRAFT Packer didn't put the omnicon = =

END OF TAPE

PAO This is Mission Control, we're having intermitten lock on the TDRS. Communication comes and goes as the antennas periodically are not aligned.

CAPCOM Challenger, this is Houston, Dan, can you say again, we lost everytning except omicron, we lost lock on the TDRS.

SPACECRAFT Okay, Houston, we're setting up to do this auto maneuver to the minus 2 startrack test attitude per message 36 bravo. And the omicron didn't print real clear. It looks like plus 2 to us but we just want to verify that that's omicron plus 2 on line 12.

CAPCOM Okay, we'll look that up.

SPACECRAFT Okay, and Dale, cycled the gate valve on the WCS.

CAPCOM Roger, and Dan, ECOM says that that it looks like that helped the situation a lot and you're leak rate seems to be declining.

SPACECRAFT Okay Mary, thanks.

CAPCOM And Dan, this is Houston, that is verified a plus 2 omicron.

SPACECRAFT Okay, Mary, we've got the startracker maneuver loaded, if GNC would like to check it.

CAPCOM And Challenger, this is Houston, your data looks good to us.

SPACECRAFT Okay.

CAPCOM Challenger, this is Houston, we're 30 seconds LOS, we'll lose you through TDRS and pick you up through Indi at 21:34 about 4 minutes from now.

SPACECRAFT Okay, see you there.

PAO Mission Control, Houston. We're out of the range of the Tracking Data Relay Satellite, we'll be picking up over Indian Ocean station in just about a minute. Some discussion on that last pass with the crew about cycling a valve on the waste containment system, the Orbiter potty. There is a valve there that vents that facility to space, has a small leak in it characterized by the flight control personnel as just a nuisance. It's a kind of thing that has been seen on earlier Orbiter flights and is believed to be contaminated O-ring on that valve. There is absolutely no mission impact to it. And it is something that could be entirely isolated by closing another

valve but they have elected to go ahead and leave it open prevents any odors from the WCS area, finding their way back into the cabin and that's such a minor leak that they just elected to go ahead and leave it leaking and add a couple of pounds, small amount of extra nitrogen or oxygen to the cabin before sleep time in the evenings. We'll be picking up over Indian Ocean station momentarily, this is Mission Control, Houston.

CAPCOM Challenger, this is Houston with you through Indi for 2 minutes.

SPACECRAFT Houston, loud and clear. How us?

CAPCOM You're loud and clear too, Richard.

SPACECRAFT The maneuver we just started to the startrack test attitude.

CAPCOM Roger, we see that.

SPACECRAFT And Mary, while we are waiting for this maneuver to complete, we can copy the information you have on the tail glow that you said you've (garble) up on.

CAPCOM Okay, Dan, we'll get Jeff on the line and let him talk to you about.

CAPCOM And Dan, we're 30 seconds LOS, so we'll probably hold up on that discussion till we get to Yarragadee at 21:48. If that's okay?

SPACECRAFT Okay, well we'll probably be in the midst of that startracker test so we'll let you know when we got the time and we'll catch you in a little bit, we've got until tonight anyhow.

CAPCOM Okay, sounds good to us. See you at Yarragadee, 21:48.

PAO Mission Control, Houston, 3 days, 21 hours, 37 minutes mission elapsed time. Challenger passing out of range of the Indian Ocean station and we'll be picking up again - -

END OF TAPE

SPACECRAFT Okay, Houston, we got (garble).

CAPCOM Okay, sounds good to us, see you at Yarragadee 21 48.

PAO Mission Control Houston, 3 days 21 hours 37 minutes, Mission Elapsed Time. Challenger passing out of range of the Indian Ocean station and we'll be picking up again over Yarragadee in about a little less than a 11 minutes. This is Mission Control.

CAPCOM Challenger this is Houston with you through Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear and let me ask you a question about this this startrack okay?

CAPCOM Go ahead, we're listening.

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM Challenger, this is Houston, read you loud and clear and we're ready to copy.

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM Challenger this is Houston, we read you loud with the background, how me?

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM Challenger, this is Houston, read you loud and clear, how me?

SPACECRAFT Roger, loud and clear and I've got a question for you on the startracker test.

CAPCOM Roger, Richard, go ahead we're ready, we copy.

SPACECRAFT Okay, we're in attitude I'll tell you a little bit about that in a second. We've gotten two stars so far, when the asterick appears on the star presence I did item 8 execute however, the asterick did not disappear immediately. And I expected that it would. However, the second star I did the item 8 execute and just when ahead and sat there and after a few seconds it did disappear but it did not disappear when I did the item 8, over.

CAPCOM Roger, we copy that. We'll get back to you.

SPACECRAFT The star, as the star rises its acquire by the Z-tracker and whether I do the item 8 or not it rises through the

angular cone of the tracker and then goes away as it disappears but I don't, at any rate we so far got two stars.

CAPCOM kay, Richard, we copy.

SPACECRAFT And another piece of information for GNC, we started the time, the maneuver per the message not the cap at a time of 35 minutes after the hour and it was showing us arriving in this attitude a little bit late, so I jacked up the maneuver rate in the Al dap to point 3 degrees per second to complete the maneuver and Dan and I got that accrued about 1 minute late and we've now readjusted the maneuver rate back in dap Al to the nominal of 0.2.

CAPCOM Roger, Richard we copy and concurr.

SPACECRAFT Okay.

CAPCOM Challenger, this is Houston, and Dick we've got a question for you on that. Did those star ADAs appear in the table?

SPACECRAFT Negative, they did not. I got a star presence asterick but no track ID and the stars are not in the table.

CAPCOM We copy, thanks.

SPACECRAFT Let me make sure I read the message right as soon as I got the asterick I did the brake track.

CAPCOM That's correct Richard.

SPACECRAFT Okay. This attitude is essentially identical to the EOIM attitude and getting to look straight down at Australia.

CAPCOM Okay, Richard, if you see that circular drainage area that you were talking about over Australia again. There's no know impact crater in that area and they sure would like a photo of it, and we're going LOS in 15 seconds and we'll talk to you through Hawaii at 22 15. If we don't pick you up on TDRS before then at 22 14.

SPACECRAFT In your message, it makes more sense that it might be a dome, rather than a crater, but I certainly don't know. And we have our third star now and I've already done the Item 8 execute and the asterick has not gone away yet.

CAPCOM Roger, we copy that.

END OF TAPE

angular cone of the tracker and then goes away as it disappears but I don't, at any rate we so far got two stars.

CAPCOM Okay, Richard, we copy.

SPACECRAFT And another piece of information for GNC, we started the time, the maneuver per the message not the cap at a time of 35 minutes after the hour and it was showing us arriving in this attitude a little bit late, so I jacked up the maneuver rate in the A1 dap to point 3 degrees per second to complete the maneuver and Dan and I got that accrued about 1 minute late and we've now readjusted the maneuver rate back in dap A1 to the nominal of 0.2.

CAPCOM Roger, Richard, we copy and concurr.

SPACECRAFT Okay.

CAPCOM Challenger, this is Houston, and Dick we've got a question for you on that. Did those star ADAs appear in the table?

SPACECRAFT Negative, they did not. I got a star presence asterick but no track ID and the stars are not in the table.

CAPCOM We copy, thanks.

SPACECRAFT Let me make sure I read the message right as soon as I got the asterick I did the brake track.

CAPCOM That's correct Richard.

SPACECRAFT Okay. This attitude is essentially identical to the EOIM attitude and getting to look straight down at Australia.

CAPCOM Okay, Richard, if you see that circular drainage area that you were talking about over Australia again. There's no know impact crater in that area and they sure would like a photo of it, and we're going LOS in 15 seconds and we'll talk to you through Hawaii at 22 15. If we don't pick you up on TDRS before then at 22 14.

SPACECRAFT In your message, it makes more sense that it might be a dome, rather than a crater, but I certainly don't know. And we have our third star now and I've already done the Item 8 execute and the asterick has not gone away yet.

CAPCOM Roger, we copy that.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t191j 245:04:27 9/03/83 PAGE 1

CAPCOM Hawaii at 22:15, if we don't pick you up on TDRS before then at 22:14.

SPACECRAFT In your message, it makes more sense that it might be a dome rather than a crater but I certainly don't know and we have our third star now and I've already done the Item 8 execute and the asterisk has not gone away yet.

CAPCOM Roger, we copy that.

PAO Mission Control Houston, 3 days 21 hours 55 minutes, Mission Elapsed Time, Challenger out of range of the Yarragadee station and at the present time, directly over the central portion of Australia. We won't be hearing from the spacecraft again for about another 18 minutes until we pick up with the Tracking Data Relay Satellite if we get it on orbit number 64. Shortly thereafter we acquire over the Hawaii station if we should happen to miss Tracking Data Relay Satellite lock up. Commander Dick Truly on that last pass discussing his activities with the startracker testing that is under way. This is Mission Control Houston.

CAPCOM Challenger, this is Houston, with you through TDRS.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM You're loud and clear too, Richard.

SPACECRAFT Okay, Mary, we now have a star and an asterisk, an asterisk, and this is the 6th star we've got a star presence for during the test so far and we're timing the, I did Item 8 again, the star presence asterisk remained and we're timing to see how long it does remain and it just went out.

CAPCOM Okay, we copy that.

SPACECRAFT And that star presence asterisk lasted 2 minutes and 14 seconds.

CAPCOM 2 minutes and 14 seconds.

SPACECRAFT And Mary, I guess my definition of sunset is when the Sun stops striking the Orbiter.

CAPCOM That sounds good to us, Richard.

SPACECRAFT And I don't know, it's kind of a slow process and, but it's getting ready to happen, just the tippy top of the tail is in the sunlight.

CAPCOM Okay, we copy that. And Richard, this is Houston, the GN&C guys are pretty sure that you're getting good data even

STS-8 AIR/GROUND TRANSCRIPT t191j 245:04:27 9/03/83 PAGE 2

though that Item 8 hold on to a bug is, was not expected and they would like you to go ahead and keep pursuing the test.

SPACECRAFT Okay, if I remember right, I'm in the back now, looking aft but the (garble) said terminate at sunset, correct?

CAPCOM That's affirmative, Richard.

SPACECRAFT Houston, CDR, we've just had sunset and we have the maneuver typed in for the next test.

CAPCOM Roger, we copy tha, Richard.

PAO Mission Control Houston, Commander Dick Truly reporting their continuing with their startracker tests according to timeline.

CAPCOM Go ahead, Dan.

SPACECRAFT Roger, Mary, I changed the battery in the HRM, and since there weren't any scheduled today we got new batteries and other spare battery, I went ahead and activited it, with a start time of 21 plus 19.

CAPCOM We copy that, Dan.

PAO This is Mission Control, we're continuing to get data and voice through the Tracking Data Relay Satellite.

SPACECRAFT And Houston, CDR, Dr. Thornton asked me to get you to tell the surgeon that we're sending OBS data recording, I mean, sending OBS data down at this down.

CAPCOM Okay, we'll pass that on.

END OF TAPE

CAPCOM Okay, we'll pass that on.

PAO This is Mission Control. The crew is maneuvering the spacecraft to the proper attitude for the startracker horizon limit test. That test is to demonstrate the ability of the startracker to track a star closer than 20 degrees to the sunlit earth horizon. That equipment, those startrackers are used as part of the navigation system onboard the Orbiter. We're still receiving our data and voice through the Tracking Data Relay Satellite, although we're coming up over the ground stations for the Continental U.S. on orbit #64. We're also about 3 hours away from a scheduled in-orbit press conference with the crew and members of the news media. That will take place on orbit #66 and if we have the Tracking Data Relay Satellite at that time, well we'll be using that satellite for the press conference. If not, we'll be using the ground station passes, 3 days, 22 hours, 26 minutes mission elapsed time. This is Mission Control, Houston.

SPACECRAFT Houston, CDR.

CAPCOM CDR, this is Houston, go ahead.

SPACECRAFT Roger, Mary, on that, going back to the circular feature that we were discussing in central eastern Australia, we passed over it on this rev I'm pretty sure the - and we were directly overhead, on this pass rev at a time of 21 hours, 58 minutes, and 50 seconds. And it's large enough that looking straight down at it from 120 miles, I could only see less than half of the circle. But I'm sure that the river features that I saw is the same one that we saw yesterday from a greater distance.

CAPCOM Roger, we copy that. It's bigger than what we had thought you were talking about earlier.

SPACECRAFT Well, I'm not sure, you know, looking out this front window through the, which I tried to get a picture but with the HUD in the way and looking straight down I'm not sure that I did. But whatever, I think that was the location anyway.

CAPCOM Okay, thanks Richard, we copy that.

SPACECRAFT Well, hello Houston, we're right above you.

CAPCOM Hello Challenger, we're waving.

SPACECRAFT You bet, you got a thunderstorm out around Daisetta somewhere but the city looks clear. We can see all the freeways.

CAPCOM Would you like to give us a midnight traffic report.

SPACECRAFT Things are looking slow on the Gulf Freeway tonight.

CAPCOM Roger that.

PAO Mission Control, Houston, 3 days, 22 hours - -

SPACECRAFT Houston, Challenger, looks like we're going right over the Cape now. A nice clear night for landing down there too.

CAPCOM Thanks, Dan, and we'll check with our weatherman.

SPACECRAFT Don't believe me, huh?

CAPCOM He might be hiding right now.

PAO Mission Control, Challenger's ground track taking it right across the bridge of the Gulf of Mexico. Over the last several minutes, the craft passed directly over Houston and just a moment ago passed over the launch site, Kennedy Space Center, Dan Brandenstein reporting everything looked clear down there. Challenger is flying at a lower than usual altitude of 120 nautical miles. Recent missions, the spacecraft is operated at about 160 nautical miles and a special lower altitude is to facilitate an experiment onboard, the interaction of atomic oxygen with materials that are carried in the cargo bay. They fly at a low altitude where there are more oxygen molecules and with the payload bay doors open and facing into the flight path as so as to ram the available oxygen molecules into the cargo bay allow that experiment to take place.

END OF TAPE

PAO - - was to ram the available oxygen molecules into the cargo bay, allow that experiment to take place. The crew is still proceeding with their startracker tests. We have been locked up on the Tracking Data Relay Satellite for the last 15 minutes or so and have good contact for the S-band and the Ku-band systems. We're at 3 days 22 hours 37 minutes into the flight of STS-8. This is Mission Control Houston.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, this is Houston, and we are having a good time watching your TV right now. It's pretty amazing.

SPACECRAFT Yes. That's what I was going to ask you to do was - I just turned on camera Alpha so we could put it on the VTR which we are doing but if you're getting it real time we'll just leave it on for a while.

CAPCOM Thanks. It's a real great light show there.

SPACECRAFT Houston, CDR. That bright spot just to the right of the tail is a star or planet.

CAPCOM Roger, we can see that real well.

SPACECRAFT Hey, Mary, if you could check with the camera people, just a straight still 70-mm or 35-mm and come up with a setting that might be able to capture this I'd like to hear it.

CAPCOM Okay. We copy that, Dan, and we'll get back to you with it.

SPACECRAFT That planet is now just arising just above the air glow.

CAPCOM Roger that, and we can see the air glow.

SPACECRAFT Hey, Houston, Challenger. We have a middeck camera set up also if you want to look at Dr. Thornton and the two MS's are down there doing some of their work.

CAPCOM Roger, Dan. Right now we're having fun with the prop corresponding your vernier jet firings with the good light show.

SPACECRAFT You bet. I don't know if you can see it but we see about three more stars now appearing to the right, just to the right side of the picture, outboard of the port OMS pod.

CAPCOM Roger, we got two anyway.

SPACECRAFT Yes. Actually there's, I can, there's hundreds out there but I can see the two that you are seeing. You are about to get a third bright one, there it is now.

CAPCOM Roger that, we see it.

PAO Mission Control Houston. We're looking at some television coming down from the Orbiter courtesy of the TDRS Ku-band system. We were not planning on getting some television but the crew had the cameras turned on - there we go, we have some tail glow - -

CAPCOM We just saw the pitch jet.

PAO - - caused by the RCS firings there, out the rear of the Orbiter and you can generally make out the outline of the orbital maneuvering system pods and vertical tail fin. Just to the port side of the tail fin is what Dick Truly described as probably a planet.

CAPCOM And regarding the best way to take pictures that was ask earlier. You are going to need ASA 400 film. If you don't have any of that loaded in then we don't think it will work but you have to use an f2 stop with the ASA 400. And that's on the 35-mm camera.

SPACECRAFT Okay, thanks. Well, unfortunately there probably wasn't - we didn't have enough foresight to load a lot of that. The stuff we had we used in the tail glow - not the tail glow but the heat pipe.

CAPCOM Okay, we copy that, Dan, and - just here where there - your glow photography stuff might go well with the live TV.

SPACECRAFT Okay. You can see on the TV now that - we haven't moved the picture but the tail has essentially stopped glowing. I guess the velocity vector shifted around. I'll leave it running in this - I'll leave the camera running if you like and we'll just see what happens.

CAPCOM Okay. Thanks, sounds good to us.

END OF TAPE

SPACECRAFT I'll leave the camera running if you like and we'll just see what happens.

CAPCOM Okay, thanks. Sounds good to us.

PAO This is Mission Control, the crew has left one of the payload bay cameras on and their - it is pointing back in the direction of the tail. We're getting live video from the Challenger at this time. Challenger is in darkness, however, and you can only barely make out any of the features of the spacecraft and what Richard Truly described as probably a planet in the background. A little earlier we had a faint outline around the tail, the vertical tail and the OMS pods due to the oxygen interaction but the Orbiter's attitude has shifted slightly and the oxygen molecules are no longer striking that surface and causing the tail glow. However, the Challenger is about 5 and a half minutes - -

SPACECRAFT - - totally dark now, I'm going to tilt and pan that camera up and see if I can show you around.

CAPCOM Okay, we'll try to catch the belt.

PAO Challenger, about 5 minutes away from daylight terminator where they will be seeing a sunrise, if the camera is still operating at that time, we still have TDRS Ku-band, we may get something at that point. Dick Truly pointing the camera in a different direction at the present time.

CAPCOM We're all real impressed, we can see it real well. Isn't it the wrong time of the year for a (garble)? And Richard this is Houston, the MOCR has a special request.

SPACECRAFT Go ahead, Houston.

CAPCOM I think we're about 5 minutes from a sunrise, and if you guys don't mind working the cameras we'd like to take a look at one.

SPACECRAFT Sure, be glad to.

CAPCOM Thanks.

SPACECRAFT Okay, now let us try to figure out where it's going to occur and which camera so hang on a minute. Okay, Houston, I think we just figured it out and we're going to try and get a camera on it.

CAPCOM Thanks, Dan.

PAO Mission Control - -

SPACECRAFT Looks like the attitude (garble) and with delta being dead that's probably the best we can do but we'll go give charlie a try real quick.

CAPCOM Okay, we can see that.

PAO Mission Control, crew attempting to point one camera in the direction of sunrise and we should be getting a good picture of sunrise from 120 nautical miles up in space.

SPACECRAFT Okay, Houston, there it is from charlie.

CAPCOM Thanks, Dan.

SPACECRAFT And I seriously doubt that TV can do it justice.

SPACECRAFT And Houston, I've got it on black stretch if INCO can suggest anything best, we're looking black and white and I'm really not sure what you're, how its coming out on yours.

CAPCOM Okay, I'll check with them.

SPACECRAFT Okay, Houston, the camera itself is in the shadow of the starboard wings.

CAPCOM Roger, Richard.

PAO This is Mission Control, we're getting some pictures of a sunrise from space. The camera looking out over the starboard wing of the Orbiter.

SPACECRAFT And Houston, Challenger.

CAPCOM Go ahead, Dan, this is Houston.

SPACECRAFT Roger, on the EOIM experiment, you know those samples of (garble) they had there as we recal they all started out being pure white but after night of forward into the velocity vector, they've - some of them are still pretty white, but some of them have changed to various shades of gray and one of them is almost a - well, I wouldn't say it's black but it's a - quite dark gray. I tried to document it on film this morning with the 70 mm so I got some pictures of that.

CAPCOM We copy that.

PAO Mission Control Houston, 3 days 23 hours Mission Elapsed Time. Challenger passing over the sunlit portion of the Earth now and about to cross the western coast of Africa.

END OF TAPE

PAO Mission Control, Houston, 3 days, 23 hours mission elapsed time. Challenger passing over the sunlit portion of the earth now and about to cross the western coast of Africa. We're seeing - -

SPACECRAFT Houston, if you're interested, we've got camera A zoomed in on that A frizzy now.

CAPCOM Okay, we'll take a look, Dan.

SPACECRAFT It's a pretty low grazing angle, you probably won't be able to see it as well as we can and the colors and how they've changed.

CAPCOM Well, we can see it well it enough that the payload officer's flipping his book.

SPACECRAFT Run that past us again, Mary.

CAPCOM Picture is good enough that you have the payload officer in his book looking for his preflight photos.

SPACECRAFT Okay, looking at them as you look at them, the small foil ones, the ones furthest aft near the flag is the darkest and then the second one from the back is one of the ones that's pretty white yet. And then the second one from the front, once again with the small squares is the second darkest, that's turned quite a bit. The front one also is quite white and the 2 large ones about the same color and they're medium gray.

CAPCOM Roger, Dan, we can see that from here.

PAO This is Mission Control. We're looking at some of the samples of the material mounted in the cargo bay for the oxygen interaction test. This material is exposed to the oxygen molecules impacting them at this lower, Shuttle orbital altitude. The test was set up to observe the erosion effects on that material from the oxygen. And the pilot, Dan Brandenstein, noted that some of this material had changed color. The Shuttle is out over southern Africa at this time and we're just a couple of minutes away from losing contact with Tracking Data Relay Satellite. We should still have voice through the Botswana station if we switch over to that in about a minute and a half.

SPACECRAFT Houston, we're going to leave the camera set where they are now, we got to go back and get ready for this next test.

CAPCOM Okay, Dan, thanks for the show. We really appreciated it, had a good time.

SPACECRAFT And Mary, camera Charlie has a good view of the ground on it.

CAPCOM Okay, thanks.

PAO Mission Control, we've lost our connection with the Tracking Data Relay Satellite now passing beyond its range. Still have voice capability through the Botswana station.

CAPCOM And Dale, this is Houston. Thanks for the offer but we have just handed over Botswana and we're now AOS over Botswana for another 3 minutes.

SPACECRAFT Okay, too bad. And Houston, we started the Horizon Limit Test on time. Got a star presence in the minus C tracker but so far no track ID. And we're in startrack and we just put star 52 into the table.

CAPCOM Roger, we copy that.

SPACECRAFT Okay Houston, CDR, the Z tracker is just continually putting star 52 into the table. It's taking about 8 to 10 seconds and I'm continuing to clear it if that's what you'd like me to do.

CAPCOM Roger, Richard, we copy and that's affirmative; we'd like you to continue to clear it.

SPACECRAFT Okay, we'll do this right up to the end of test time.

CAPCOM And Challenger, this is Houston, we're 30 seconds LOS and we'll talk to you through Yarragadee at 23 plus 22.

SPACECRAFT Okay, and it just went into the table the eighth time.

CAPCOM Roger, we copy that.

PAO Mission Control, Houston, 3 days, 23 hours, 8 minutes mission elapsed time. Challenger is passed out of range of the Botswana tracking station in southern Africa. We'll be reacquiring in about 13 minutes over Yarragadee and Australia.

END OF TAPE

PAO Mission Control Houston, 3 days 23 hours 8 minutes, Mission Elapsed Time, Challenger has passed out of range of the Botswana tracking station in Southern Africa. We'll be reacquiring in about 13 minutes over Yarragadee in Australia. And it's about 40 minutes before we pick up the Tracking Data Relay Satellite again. Dick Truly reporting that they are continuing with their startracker horizon limit test. During that previous pass with the Tracking Data Relay Satellite we had some spontaneous television down from the Orbiter. They were locked up with the Ku-band and had capability for television. The crew simply switched on some of the cameras and we were able to take a look at what the crew was seeing. As they passed into the daylight side of the Earth, we got to see a portion at least of a sunrise from space. There are some more Ku-band test activities listed in the timeline for this morning over the next hour. And then on orbit number 66 as we get within range of the Tracking Data Relay Satellite over the Hawaii station, whichever is operatable at that time, we would be having the crew's in-orbit press conference. It's a little over 2 hours away, 3 days 23 hours 10 minutes Mission Elapsed Time, this is Mission Control Houston. Mission Control standing by for acquisition through Yarragadee.

CAPCOM Challenger, this is Houston, with you through Yarragadee for 6 minutes.

SPACECRAFT Hi, Mary, and Richard's coming on with some data for you.

CAPCOM Hello, and we're standing by ready to copy.

SPACECRAFT Okay, on the startracker horizon limit test, we ended up, if my count right, putting, the star went into the table about 15 times, it was taking generally 8 to 10 seconds from the time we cleared the table until it acquired and put it back in. Until we got to about 23 hours and 10 minutes and then it would get a star presence for a few seconds, it would get a track ID for a couple of seconds, but I guess it was just too low and it wouldn't, it stopped taking them and so by 23:11 at the end of test time, it had not gone in the table for a little over a minute, so as far as I could tell, it looked like it should be some good data, I don't know what the conclusions would be.

CAPCOM Sounds good to us, Richard.

SPACECRAFT Okay, and we've got the maneuver loaded to go to the Ku-band test attitude.

CAPCOM Roger. Challenger, this is Houston, we're 30 seconds LOS, we'll talk to you again through TDRS at 23:49.

STS-8 AIR/GROUND TRANSCRIPT t196j 246:05:40 09/03/83 PAGE 2

PAO Mission Elapsed Time, 3 days 23 hours, 29 minutes, this is Mission Control. Challenger passing out of range of the Tracking Station at Yarragadee, Australia. On the last leg of orbit number 64, we'll have a loss of signal period of about 20 minutes before we pick up again over the range of the Tracking Data Relay Satellite out over the Pacific. On that last pass, Commander Richard Truly reporting that they had completed the startracker horizon limit test and the Orbiter was maneuvering to the proper attitude for Ku-band testing. The crew appears to be a little bit ahead of the timeline at present. And we're a little bit less than 2 hours away from the start of the on-orbit press conference with the crew. This is Mission Control Houston.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t197j 246:06:02 9/3/83 PAGE 1

PAO - - away from the start of the on-orbit press conference with the crew. This is Mission Control, Houston.

PAO Mission Control, we have acquisition through TDRS at this time.

CAPCOM Challenger, this is Houston, with you through TDRS.

SPACECRAFT Yes. Initial pitch rotation was started on time.

CAPCOM Richard, this is Houston. Say again, you were broken and cut out. Say again, your last.

SPACECRAFT Roger, Mary, I said we started the Ku-band common track first pitch maneuver on the - -

CAPCOM Challenger, Houston and roger, Richard, we copy that the last transmission that you started your maneuver on time.

SPACECRAFT (garble)

CAPCOM Challenger, this is Houston, we are 30 seconds LOS. We'll try handing over to TDRS. If we're still having cut out problems, we'll talk to you through Buckhorn at 23:57.

SPACECRAFT Roger, Houston.

CAPCOM Challenger, this is Houston with you through TDRS and we've got a couple of items to discuss with you when you're ready.

SPACECRAFT Houston, we're reading you loud and clear. Go ahead.

CAPCOM Okay, Dan, you're loud and clear too. We'd like you to know that that WCS leak through the gate valve is down to 1.2 lbs per hour since you cycled the gate valve. But in order to avoid an alarm due in about the same time, 1 rev from now, we'd like you to do a manual cabin repress at this time, using Orbit Ops Checklist 5-10.

SPACECRAFT Roger, Houston, and verify you want a repress with N2.

CAPCOM Roger, Dan, and we would like to use the procedure as written. That uses O2 and N2.

SPACECRAFT Okay.

CAPCOM And then the second item is giving you a little background for the press conference coming up when you're ready to talk about that.

SPACECRAFT Okay, Houston, go ahead.

CAPCOM On the next rev when we come up on Hawaii, we're going to start the show. And - -

SPACECRAFT Break, break Mary. You're coming in 2 times in about half a second out of phase

CAPCOM Okay, we'll try to check that.

SPACECRAFT Okay, that one was perfect.

CAPCOM Okay, how do you read now?

SPACECRAFT Loud and clear.

CAPCOM Okay, I'll try again. Over Hawaii, we're going to start the press conference and probably there will be 2 people speaking to you there. Then you'll have a small break as we hand over to TDRS it will continue throughout the rest of the coverage with everyone having a chance to talk. However, if we run into problems with the Ku-band coverage, then if we lose a lock, we'll pick you up AOS at Goldstone. Now if we lose lock later than that, we will pick you up AOS, Mila.

SPACECRAFT Okay, we copied all that, sounds good.

PAO This is Mission Control, 4 days, 0 hours, 7 minutes mission elapsed time. We have acquisition through Mila.

CAPCOM Challenger, this is Houston with you through Mila.

SPACECRAFT Roger.

CAPCOM Challenger, this is Houston, we'll be handing over to TDRS in 10 seconds.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t198j 246:06:39 09/03/83 PAGE 1

CAPCOM Challenger, this is Houston with you through Mila.

SPACECRAFT Roger.

CAPCOM Challenger, this is Houston, we'll be handing over to TDRS in 10 seconds.

SPACECRAFT Roger.

CAPCOM And Challenger, this is Houston, we're back with you through TDRS now.

CAPCOM Challenger, this is Houston and we can see that cabin repress is complete and it all looks good to us now.

SPACECRAFT Say again please, Mary.

CAPCOM Roger, Richard. The ECOM says your cabin press looks good now.

SPACECRAFT Okay, we had completed the procedure and then the WCS was used shortly after that and we did trigger one more alarm but it looks good to me too.

CAPCOM Okay, we copy that.

CAPCOM Challenger, this is Houston.

SPACECRAFT Roger, Houston, do you see that L3D got deselected to leak.

CAPCOM Roger, we see that and we'd like you to press on and leave that deselected at this time.

SPACECRAFT Roger, I concur.

SPACECRAFT Houston, CDR.

CAPCOM CDR, This is Houston, go ahead.

SPACECRAFT Roger, I'm sure this is no news to PROP but on page 10-10 in the MAL book, we end up in step 31. Sorry, block 31.

CAPCOM Roger, we copy that.

CAPCOM Challenger, this is Houston.

SPACECRAFT Go ahead, Mary.

CAPCOM Yes, on that L3D alarm that you got in the deselect. Talking about page 10-10, block 31, after looking at that, lovely (garble) PROP would like you to know that he thinks

STS-8 AIR/GROUND TRANSCRIPT t198j 246:06:39 09/03/83 PAGE 2

that it is a real very small fuel leak and the fuel injector temp is hanging right around 20, 21 which is the limit.

SPACECRAFT Okay, we understand, thank you. Houston, Challenger.

CAPCOM Go ahead Challenger, Houston here.

SPACECRAFT Roger, we terminated the pitching for the Ku-band test at 37 minutes and now we've set up to initiate going to the optimum Ku-attitude at 45.

CAPCOM Roger, we copy that.

CAPCOM And Challenger, INCO wants you to know that we got some good data during that test so thanks a lot.

SPACECRAFT Good show. It sounds like the TDRS is working real well.

CAPCOM Roger that.

SPACECRAFT Plus Ww enjoyed doing acrobatics on orbit.

CAPCOM Sounds like a lot of fun.

SPACECRAFT You bet. Houston, CDR.

CAPCOM CDR, this is Houston.

SPACECRAFT Roger, would you, could you pass on to Bob Stephenson or Skully Power, one of the oceanographers, that the (garble) current has been very quiet and has very little structure in it this whole mission.

CAPCOM Roger, we got that and we'll pass it along.

SPACECRAFT Okay, we have seen a good bit of structure particularly in the water east of Australia and a great deal in the central Pacific.

CAPCOM Okay.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t199j 246:07:14 09/03/83 PAGE 1

SPACECRAFT Okay, we have seen a good bit of structure particularly in the water east of Australia and a great deal in the central Pacific.

CAPCOM Okay. And Challenger, this is Houston, we're 30 seconds LOS and we'll talk to you again through Yarragadee at 00:57.

SPACECRAFT Roger, see you there.

PAO Mission Control Houston, 4 days 0 hours 44 minutes Mission Elapsed Time. Challenger out of range of the Botswana tracking station in southern Africa. Orbit number 65. During that last pass we had some conversation with the crew over one of the reaction control system jets that was deselected. The propulsion officer in Mission Control was watching that during our acquisition through TDRS noting that temperature was going down on that jet indicating that it may have a very small fuel leak, so that one was turned off. And they don't expect any impact from that. We will be having the crew press conference coming up in just a short while on orbit number 66 as we come within range of the Hawaii and the Tracking Data Relay Satellite Range. The astronaut crew onboard will have their television set up and we expect to be getting television from the spacecraft and we also have the six press representatives that will be taking part in the crew conference. That will be televised from room 135 in Building 2. That room is not going to be open generally, it is set up with the cameras and the panel of the six journalists that will speak with the crew during that press conference period. So that room will be closed to general traffic. We're about 11 and a half minutes away of a brief pass over the Yarragadee station, very low elevation. We may just barely have contact with the spacecraft at that time and then the next reasonable pass will be over the Guam station in 22 minutes. 4 days 0 hours 46 minutes Mission Elapsed Time, this is Mission Control Houston.

CAPCOM Challenger, this is Houston, with you through Yarragadee for 3 minutes.

SPACECRAFT Roger, Mary, reading you loud and clear.

CAPCOM You're loud and clear too, Dan. Challenger, this is Houston, we're 30 seconds LOS, talk to you again through Guam at 1 plus 08.

SPACECRAFT See you there, Mary.

PAO Mission Control, Challenger out of range of the Yarragadee station. About 7 minutes away, 7 and a half minutes away from the Guam tracking station and we're about 20 minutes, a little bit around 20 minutes away from the start of the crew

STS-8 AIR/GROUND TRANSCRIPT t199j 246:07:14 09/03/83 PAGE 2

inflight press conference. Just a reminder the participants in that press conference, the six news media representatives will be in room 135 of Building 2. And only those representatives along with the television equipment and cameras will be permitted in that room for the press conference. The room itself will be closed to general traffic for this event.

CAPCOM Challenger, this is Houston, with you through Guam for 5 minutes.

SPACECRAFT Roger, Houston, loud and clear, I'd like to, give me a second I'm going to set up the conference communications configuration onboard and give you a call.

CAPCOM Okay, Richard, we're standing by.

END OF TAPE

SPACECRAFT - - set up the conference communications - configurations onboard and give you a call.

CAPCOM Okay, Richard, we're standing by.

SPACECRAFT Okay, Mary, comm check from the middeck.

CAPCOM Roger, Dale, you're loud and clear, how me?

SPACECRAFT Okay, have you the same, thanks a lot.

CAPCOM Challenger this is Houston, we're 30 LOS through Hawaii, we'll talk to you at 1 + 21.

SPACECRAFT Roger, Houston, you're loud and clear, we'll see you there.

PAO Mission Control Houston, 4 days, 1 hour, 13 minutes mission elapsed time. Challenger passing out of range of the Guam station, we'll be picking up over Hawaii in about 7 1/2 minutes or so for the start of the crew inflight press conference. This is Mission Control Houston.

PAO This is Mission Control Houston, 4 days, 1 hour, 20 minutes mission elapsed time. Challenger coming up on the Hawaii station in about 45 seconds for the start of our crew inflight press conference. This is Mission Control.

CAPCOM Challenger, this is Houston with you through Hawaii for 6 minutes with PAO standing by.

SPACECRAFT Roger, Houston, read you loud and clear, how me?

CAPCOM You're loud and clear too, Richard.

ROSSITER Caption Truly, this is Al Rossiter of United Press International. You've completed about 2/3 of your flight now, what is your assessment of the mission accomplishment so far?

TRULY Al, so far I would say that the flight has been extremely successful, we've had a great time watching the fire works on the night launch, the CFES operation and the INSAT deploy and the words we've heard from Mission Control on INSAT are, that it's working very well. The TDRS testing is gone well. I'm very happy about it. How's it look down there?

ROSSITER It looks great so far. Col. Bluford, President Reagan on Wednesday congratulated you for paving the way for other blacks in space. You didn't have a chance to respond then, what would you like to say about your flight, what is it's significance as far as blacks are concerned?

BLUFORD Well I assume. The flight, I think is just going to be one of many flights in which black Americans are going to be flying in space. We have two black Americans that are going to be flying next year, there will be many more black Americans flying in the future.

ROSSITER Dr. Thornton, have there been any crewmen who have had symptoms of space sickness, and if so can you tell me how many and to what extent.

THORNTON They have been, in a crew this size, the usual range of symptoms, that occur during adaptation - -

ROSSITER Dr. Thornton, could you repeat that? We lost - -

THORNTON - - but as far as going into exact details, if you consulted me in your office, why I think this would be enough said.

ROSSITER I'm, I'm sorry, I think we lost part of your answer. The initial part, could you repeat that please sir.

THORNTON Yes, I say that we have seen a variety, a range of symptoms of adaptation and that's fortunately what I came to study and as far as going into exact details, I still consider myself a physician.

BENEDICT Commander Truly, this is Howard Benedict, Associated Press. On Tuesday you lifted off on the first night launch in the Shuttle program, and that was a spectacular sight. Now on Monday morning you are to make the first night landing, does that give you any concern?

TRULY Howard, Dan and I have trained and tested and taken a look at the night landings, and the night lighting systems for almost a year and with the weather predictions that we've seen from Edwards, no we're not concerned, we're looking forward to the landing, but I just as soon postpone it 2 or 3 days and stay up here.

BENEDICT Dr. Thornton, has your research up there uncovered any clues about what causes motion sickness?

THORNTON I would say that I learned more in the first hour and a half onorbit here than I - -

END OF TAPE

THORNTON I would say that I learned more in the first hour and a half on orbit here than I had by all of the literature research that I'd done and all the active work in the past year. I would say, yes.

BENEDICT Okay, for Guy Bluford. In one of the papers today there was an editorial cartoon showing a young black boy with a vision of you, Guy Bluford, floating in space and they borrowed the caption from Martin Luther King. It said, "I have a dream." What message to you is a first American black in space have for black use who might aspire to become astronauts?

BLUFORD I think that this is to show that that possibility does exist and that that dream can be fulfilled and that there are many opportunities for other blacks to fly in space as well as mine.

Now I have one for Dale Gardner. For two days now you have been testing the remote arm lifting a four ton package around the bay. Do you feel it is, this arm now is qualified to lift a ten ton package on the thirteenth flight next year and also rescue a satellite as planned?

GARDNER Well, this 8000 pound payload was an easy step up from the 3,000 lbs that we had in STS-7. The guys on the ground will have take this data and put it into computers and due predictions as to how the 20,000 lb cable will handle. But if the step from this one to that one is as easy as this last step, I don't think they'll have any problems. It flew very nicely and the Canadians ought to be very proud of that piece of (garble) it really works nice.

CAPCOM Okay, Dick, we're about a minute and a half LOS. We're going to handover to TDRS, we should pick you up pretty rapidly after that.

SPACECRAFT Okay, Mary, we'll see you at AOS, TDRS.

CAPCOM See you there

CAPCOM Challenger, this is Houston with you through TDRS with PAO standing by.

SPACECRAFT Loud and clear, Mary.

CAPCOM You're loud and clear too, Dale.

LYNN SHERR ABC NEWS Commander Truly, this is Lynn Sherr from ABC news. In view of your participation on the task force that recommended it as possible and desirable to fly private citizens on future Shuttle flights. I'm wondering as commander of this mission, how would you have liked having a passenger onboard?

TRULY Hi, Lynn, how are you doing? Yes, I did participate in that and I do think in the future we can safely and easily fly private citizens in space and with the proper introduction and preparation. I don't think on this flight, we'd had any problem with one as matter of fact, this probably would have been a nice one to have a passenger, a citizen with us.

SHERR Would there have been any aspect in your estimation that a private citizen could not have handled?

TRULY No, I don't think so.

SHERR I wonder if I could direct the same question to Dr. Thornton. From what you have seen, Dr. Thornton, of the reaction of the other crewmembers and from your own tests, do you believe that a private citizen would have behaved any differently?

THORNTON No, I see absolutely no contrary indications to flying private citizen in reasonable health.

SHERR This is for Dan Brandenstein. Dan, before the launch, you described yourself as a pretty easy going and unroughable guy, you also said that it took a lot to get you worked up. I'm wondering if there's anything on this mission including ascent that has changed that image of yourself?

BRANDENSTEIN That puts me on the spot. Well, I don't know. It was mighty exciting. I don't think I've ever been excited as I was on that ascent. That was a real thrilling ride and I think equally as thrilling was the first sunrise or orbit. It was just a fantastic view that is pretty hard to describe.

SHERR This is for Dale Gardner. Dale, I'm wondering from your perspective now at some 138 miles above us earlier much higher. Does it change your outlook on life? What is it that you are thinking as you are floating above us at that orbit?

GARDNER About the next meal. Not really, the view of the earth is fantastic. Up to this point, of course, I've seen all of the continents mostly on maps and it's really quite a sight to go - -

END OF TAPE

GARDNER No, but really the view of the Earth is fantastic, up to this point, of course, I've seen all the contents mostly on maps, and it's really quite a sight to go flying over them at 300 miles a minute and to see all those sites that had previously been on paper before your eyes. It's a beautiful world down there, not only the land but the oceans and I don't think I'll ever forget it for the rest of my life.

SHERR This is for Guy Bluford. Col. Bluford, before you went up you talked about the fact that you realized you would be a pacesetter but you didn't think you had to be perfect. It seems to us that your launch of the satellite was indeed perfect, I wonder if you could access your own performance, so far.

BLUFORD Sounds like a loaded question. I've been very pleased with the way things have gone on the mission, not only with my own performance but with the performance of the total crew. I think as a total crew we've done rather spectacular job.

SHERR And finally, for Commander Truly again. It looked at one point as if the PFTA might have been positioned in the figure of an 8, could that have been possible?

TRULY No the arm doesn't have quite enough joints for an 8.

SHERR And the PFTA didn't help you at all. Commander Truly, one more, you all have talked about the routine aspects of Shuttle flights, does this press conference as you orbit some 140 miles above us, feel routine to you?

TRULY No I don't think this is a routine press conference, we didn't have any problem at all in doing it and talking to you but no I don't think it's routine but I think it'll probably happen more and more and I hope it allows people in America to share, you know, with the few of us that can see the Earth, a little bit of it.

NEAL Well Dick, so do we, this is Roy Neal of NBC News. My first question is for Dr. Bill. Dr. Thornton, as the oldest astronaut to fly, I wonder if you could give us a little analysis on whether or not space flying really is for older folks, the way John Young would have us believe.

THORNTON Well we certainly don't stop life just because we have a few years, it amounts to the condition of the individual and that sort of thing and as far as John and I are concern, we're still somewhere about 30 and I would think that most of, a large part of America is in the same situation, seriously, we should not count physical conditions by the number of years but look at the physiological age and the capacities of an individual.

NEAL I noticed that old man Dale Gardner was shaking his head affirmatively by the way, now here's one again for Dr. Thornton and for Col. Bluford and in that order please. Dr. Bill, after being up there flying around inside the Challenger and looking outside at all the clouds and the cities down below, I wonder what you see other than just a picture postcard, what do you see when you see the Earth.

THORNTON Frankly, a see a pretty humbly experience when you stop and think that this may be the only spot that supports life for at least 5 light years and maybe more, it is a very unique spot indeed and I think one that deserves very careful assessment of our responsibilities to it.

NEAL Guy?

BLUFORD For me I see a beautiful world, one that has supported us not only on the planet itself but it also is supporting us in space and I hope that our contributions will make that world even more beautiful as years continue on.

NEAL Okay, my next question is addressed to Dick Truly and to Dan Brandenstein as pilots. Here on Earth we've been very concern for the last couple of days about some Russian jets, which shot down a Korean commercial airliner with 269 people onboard, now as pilots have you been too cut off there in space to follow events here, I know this was sent up to you on your morning newspaper, your teleprompter, but have you been too cut off or do you have some thoughts on this situation?

TRULY Well I think the situation is absolutely ridiculous and terrible and I, although I know nothing about it other than the short news summary, that was sent to us last night, which incidently, Roy, I requested - -

END OF TAPE

TRULY Well I think the situation is absolutely ridiculous and terrible and I, although I know nothing about it other than the short news summary which was sent to us last night, which incidentally, Roy, I requested, because without some news you can get cut off. I'm sure you remember back in Skylab we used to send the crews news every evening and I think that's a good idea. We enjoyed looking at those news summaries, but that certainly was the most disheartening one of them all. Here, Dan.

NEAL Dan, how about you?

BRANDENSTEIN Well I pretty much have to voice the same opinion that Richard did. I guess I can't possibly understand a single reason for shooting down a commercial airliner regardless of where or when it is. But once again, we don't have all the facts and you know, you can't make a final judgement until you know all the facts.

NEAL And finally for you Guy, when you get back to Philadelphia what are you going to tell all those folks?

BLUFORD That flying in space really is a lot of fun and working in zero-g is really a piece of cake and the view out there is really spectacular.

DEAN Good morning everybody, this is Mort Dean from CBS. I wonder if anyone of you would be willing to raise his hand and say, yes, I suffered from the dreaded space adaptation syndrome? Do you want me to repeat that question? (Laughter)

THORNTON No, Roy, we'll wait and let you come experience it for yourself. Sorry Morton, we'll let you experience it for yourself. Then you can give a better first hand report.

DEAN Well that's a deal, but let me pick up on that doctor Thornton, I know that you have addressed yourself to it before, but have you learned anything that would leave you to say that you're on your way to solving that problem?

THORNTON Oh, I think certainly my colleagues would take me to task if I were to be so bold as that. But again, I would emphasize that this is the place to study the problem and again I would say I think I learned more in the first hour and a half than I have in all the previous years that I put in on it and I would certainly hope that we have, that I will be able to add something to the solution of the problem, because I'm convinced that it is very solveable - -

DEAN Commander Truly, was it a - -

THORNTON - - (garble). And it's a very transient thing and it's not the dreaded thing that people might talk about sometime.

DEAN Commander Truly, having two celebrities on board, Bluford the first American black and Thornton the oldest astronaut yet to fly, was it a difficult crew to handle?
(Laughter)

TRULY Morton you have to watch this crew every minute.
(Laughter).

DEAN What about how habitable the spacecraft is with 5 men onboard and no shower onboard. How was it to live in for the 5 of you?

TRULY Frankly, I think a crew of 5 on the Space Shuttle is a good size. We've stayed out of each other's way most of the time, we've done our job and we've also had plenty of time to fix meals and visit with each other. And, of course, with 5 people you always have at least one person that can take off and really enjoy it and work on the fun things of spaceflight, so I think this about the right size. And frankly, I was thinking on that first day, after about 5 hours, all 5 of us has been working every minute, and now I look back on flight 2 with Joe Engle and I don't see how those 2 men flights got it all done, it's, there's a lot to be done up here.

DEAN Let me ask this of Guy Bluford. Did you find that it was totally impersonal to be up there or is there a place to hide and be by yourself with your own thoughts? I think we're missing the best part of this. (Laughter)

BLUFORD I think there's a place to sort of hide and be by yourself. You can go up against the window and watch the world go by, so to speak, and reflect on how lucky you are to be here, and how beautiful the view is. So there are times in the flight where you can reflect on the experience that you're having.

DEAN And Dan, rather quickly, what will you remember most about this trip?

BRANDENSTEIN Well it's awful hard to forget that launch.

DEAN Okay, thank you very much.

END OF TAPE

DEAN And Dan, rather quickly, what will you remember most about this trip?

SPACECRAFT Well, it's awful hard to forget that launch.

DEAN Okay, thank you very much.

GARY SWEITZER CABLE NEWS NETWORK Dr. Thornton, this is Gary Sweitzer at Cable News Network. You said earlier that a range of symptoms of the space sickness syndrome had been seen. Without getting too graphic and without violating the confidence which I know you don't want to do of your patients up there, can you give us a description of that range of symptoms? What kinds of things did you see?

THORNTON It can cover the space adaptation syndrome can cover obviously all the way from upset stomach to a drowsiness, malaise to just a slight giddiness.

SWEITZER Well, after your several days of data gathering here you said even in the first hour and a half you had more valuable study than much of the time you spent here on earth studying the problem. Are you at a point yet where you can even speculate about the leading cause or causes of the syndrome.

THORNTON No, I think it would be very premature at this time. I'm sure I'd be taken to task by my colleagues for speculation at this point. On the other hand, I have absolutely no reason to think that it won't become a problem of the past just as in the early days the weight losses that were of great concern which turned out to be a simple enough thing or the problem of what the static hypertension when we return are pretty much things of the past. I think that this will also follow the same course.

SWEITZER A final question for you, Dr. Bill. Not to belabor your age anymore, but at age 54 and being the oldest in space yet, have you seen any changes in yourself in blood pressure or at any of the other things you are monitoring that you didn't see in the others didn't hear from others in the past or that Dr. Thaggard on the last flight didn't report?

THORNTON Oh, I don't believe so. Richard, did you? Does anyone notice anything? No, actually my physiological reactions and all seem to fall pretty much within the normal range. Again, I would encourage people to count age by physiology rather by than simple chronology.

SWEITZER There is one last question for you Dr. Bill that I don't think any of us would want you to get by without answering and that is, how are the rats today?

THORNTON Oh, I think, let's just say that the first day, it was obviously a new experience for them but like the rest of us, they have settled in quite nicely, feeding, grooming, and such as that. Doing well.

SWEITZER Commander Truly, before the launch, you acknowledged that the mission may lack pizzazz in the public's perception but you said that you didn't share that view. I'm wondering now in light of that earlier perception, what you would say to people who look at this mission that way? Perhaps what accomplishment are you most proud of?

TRULY Frankly, I think, you know this mission was, we did have to change our manifest, a very short notice a few months before the flight. And I think it's a great credit to the maturity of the Space Shuttle program that we could beat our commitments to our customer, the Indian National Satellite and to change the manifest to a payload that we were going to fly anyway that we had a crew that could get trained in just a short period of time if we could essentially fly on time and I think the news story would frankly be much closer to the front pages had we not been able to do this. So I think frankly, it's been a well planned, even though it was a late planned mission by necessity and so far it's really gone very well.

AL ROSSITER UPI Dick Truly, this is Al Rossiter, Jr. again. You're scheduled to land in the dark early Monday morning. Will the lack of daylight make this a more difficult landing than your first flight?

TRULY We've certainly approached the first night flight with a great deal of care just as in all test flying you do but we have developed a night lighting system that in conformance with good weather and with the heads up display as far as doing it the first time. I think Dan and I are quite ready to do it and I don't frankly think it's going to be more difficult than a day landing.

END OF TAPE

ROSSITER Guy Bluford, you spent much of your first day in flight operating the electrophoresis biological processing experiment, how did the living cells appear to separate. Did the experiment seem to operate as planned?

BLUFORD Yes, I think the whole operation both the first and second day worked out very well, we had very few problems with the CFES equipment and as I said we pumped out two samples on the first day and four samples on the second day and the whole operation went very smoothly.

ROSSITER Dick Truly again, there appeared to have been very few problems on this flight, does this in your view make it the most trouble-free Shuttle mission so far?

TRULY I don't know, I haven't counted them up. We certainly haven't had a lot of major problems but I was thinking just this morning how different this was from flight 2, with regard to the scramble that that was, it was a different kind of flight, but I tell you this is the way to fly in space, where you have several people on the crew, a spacecraft that's cooperating, you can get the job done and have time to do some of those extra things that you wouldn't get to do otherwise.

ROSSITER Dr. Thornton, again, could I return to space motion sickness just for a moment, does it appear that there might be ways to prevent the development of these symptoms in the first place?

THORNTON Once again, I won't speculate but I certainly have every confidence that as time goes on, hopefully from some of the results of this flight and others which will follow, that once again we will be able to immederate most of the unpleasant symptoms that do develop.

BENNEDICT Commander Truly, this is Howard Bennedict of AP again, its been a very successful flight, could you kind of access how does it advance the overall goals of the Space Sshuttle program and some of the things you've done?

TRULY You are referring to the Shuttle program in general, or this flight, I'm sorry.

BENNEDICT No, the Shuttle program in general.

TRULY Well it was only a year and a half ago that I flew on the second flight. At that time we were worried that, frankly, if you remember those days, we were worried about the safety of the vehicle, the thermal protection system, the engines, those kinds of things and we have graduated in a little over a year and a half to a system that's routinely, we think, deploying satellites, meeting our commitments to the customers

and I think in this short period of time for a vehicle this complicated, that's amazing, you have to really remember that this press conference is coming from space in the most complicated machine in the world and here we all have been down here for how every many minutes, it runs itself. We're really have made great strides, I think and I think it's a great future for America in space.

BENEDICT Okay, I have one question for each of you to kind of close this out, are you anxious to come home on Monday or would you all rather stay up a little while?

SPACECRAFT My vote is to stay.

SPACECRAFT My vote is to stay.

SPACECRAFT Mine certainly would be to stay.

SPACECRAFT I'd like to stay.

SPACECRAFT I want to stay as long as the food holds out.

BENEDICT Okay, thank you very much.

SPACECRAFT Thank you we enjoyed it.

CAPCOM And Challenger, this is Houston, you're back with the MOCR now.

SPACECRAFT Roger, that.

SPACECRAFT Houston, Challenger, we've got the comm, reconfigured to a normal configuration and how do you read?

CAPCOM Loud and clear, Richard, how me?

SPACECRAFT Loud and clear, Mary.

SPACECRAFT And Houston, CDR, I kind of lost track of time, how much time do we have left in this AOS?

END OF TAPE

SPACECRAFT Loud and clear, Mary. And Houston, CDR, I'd kind of lost track of time, how much time do we have left in this AOS?

CAPCOM We'll be on TDRS for another 22 minutes and then we'll have a few more minutes after that when we switch you to Botswana.

SPACECRAFT Okay, thanks a lot.

CAPCOM You're welcome.

PAO This is Mission Control Houston, at 4 days 1 hour 54 minutes Mission Elapsed Time. We still have communication with the Challenger through the Tracking Data Relay Satellite and should have that for almost 20 more minutes. Now that the press conference is completed, the crew is scheduled to deactivate the television equipment and have their midday meal, after which they will begin working with the payload flight test article and the remote manipulator system once again, picking up the shopping list items that the engineers on the ground would like them to go after with the PFTA.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, this is Houston, go ahead.

SPACECRAFT Roger, Mary, we've got time now, we've got time if you do to copy that tail glow information.

CAPCOM Roger, Dan, Jeff's right here and we'll turn it over to him.

CAPCOM Challenger, Houston, how do you read?

SPACECRAFT Roger, Jeff, got you loud and clear.

CAPCOM Okay, Dan, we saw those TV pictures and they were pretty spectacular, what it's telling us is that this is much brighter than we had anticipated, you are the only crew that's been able to see this visually. There's been some speculation that you're dark adapted because of your night launch, but I'm not really sure what goes on there. At any rate, we are anticipating that on the tail glow experiment the pictures of the jet firings are very likely going to be overexposed, you are taking those pictures at 2 seconds at f28. What we would suggest is in addition to doing that, that when you repeat the jet firings that you stop down the camera, take it at 1 second and stop it down all the way in order to reduce the amount of light that's coming in. That's the first thing we would like. Be sure to document the exposures that you make so that we can reproduce afterwards what you have done. The second thing that we would like is to try and get a sequential shot of the glow after the

jet firing. You reported it last for 5 to 10 seconds and we believe that by using the motor drive in continuous mode, you can snap a bunch of pictures of say one second exposures and that will give us an idea of the decay curve. The third thing is that any pictures or comments that you can get when you're in the EOIM attitude to correlate what other parts of the Orbiter are glowing when you see the OMS pod light up will be very helpful for future experiments. For instance, when the OMS pods light up, can you see the RMS glow?, can you see the EOIM glow? The important thing is to document all the exposures that you take and to try to give us a bracketing of exposures since we're clearly getting more light than we had originally anticipated and any other things that you can think of, we would certainly appreciate.

SPACECRAFT Roger, Jeff, and we'll be sure and do the best we can. I would like to, I did notice last night a couple of things, preliminary observations that I made last night about it and that is that the glow never completely goes away when you are dark adapted. We had all the lights off in the cockpit and we were in the EOIM attitude and I could see the glow on the wings and on the OMS pod and on the tail. I could not, however, and I wondered about that and still do, I could not see any glow from anywhere in the payload bay, when I tried that.

CAPCOM You're probably in the best position - -

END OF TAPE

SPACECRAFT . . .they glow on the wings and on the OMS pod and on the tail. I could not, however, and I wondered about that and still do because I could not see any glow from any where in the payload bay when I tried that.

CAPCOM You are probably in the best position of anybody to determine what the interesting things are that you can observe and that's just the sort of information which experimenters are going to need in the future.

SPACECRAFT Stand by one.

SPACECRAFT Jeff, I do have a procedure question, I guess in using the intensifier, we've, my plan in doing it - we really had problems the other day and didn't get much on that first try because we took the whole, well a good half of the no moon passive intensifier I was just getting the thing aimed because of the problems that we had and I want to try to overcome that. But is there a problem if we leave the intensifier on during the moon phase?

CAPCOM I don't believe that that will do any harm to the intensifier. We've had it on in the moonlight on the ground before and it didn't show any ill effects.

SPACECRAFT Okay, that'll make our job a little bit easier trying to worry about the moon. What we'll do is just turn it on after the sun goes down, we're in night and then just run the whole night pass and probably do a couple of those tonight if we got enough film and can get set up.

SPACECRAFT And one more thing on procedure. We're being told that to take one second exposures when you're trying to get an idea for the K-curve that you should stay on single exposures and just click them one right after the other.

CAPCOM Challenger, this is Houston with you through Botswana for 6 minutes and I got a couple of flight notes to pass up to you before I turn it back over to Jeff.

SPACECRAFT I'm sorry, Mary, everybody's downstairs trying to get a bite to eat. Say again.

CAPCOM Okay, Guy, I got a couple of flight notes that I got to pass up to you before the end of this pass.

SPACECRAFT Okay, stand by just a moment, Mary.

CAPCOM Okay, Guy, standing by.

SPACECRAFT Go ahead, Mary.

CAPCOM On your TV03, PFTA OPS which is set up for TV03 is for 4, day 4 02 50. We'd like you to mount an ox light on or near the camera for any night pass use and it'll help the TV scenes a lot.

SPACECRAFT Understand ox light near camera for TV03 PFTA operation.

CAPCOM Roger that, for any night pass and one more on PDRS procedures.

SPACECRAFT Okay, go ahead.

CAPCOM On the exterior survey procedures on pages 5-15 and 5-26.

SPACECRAFT Okay, go ahead.

CAPCOM You are to delete all procedures and caution boxes to inhibit the UHF transmit while in the single mode. And the reason we can do that now is the EMC testing has indicated that the adverse EMC affects the, caused by a lower UHF antenna is not a problem as we thought it might be. So we got a little more leeway there.

SPACECRAFT Roger, you are going to have to repeat that, Mary. We're having problems picking you up because there's an echo and which is coming in about a half second after your talking and it's difficult to understand what you are saying. Understand you are talking about the exterior survey on the RMS page 5-15 to 5-26. And you wanted - -

CAPCOM It was 5-15 and 5-26, Guy.

SPACECRAFT Mary, you want us to delete taking the UHF off, is that right?

CAPCOM Yes, you don't have to inhibit your UHF transmit at all while you are in the single mode because of the EMC testing has showed us it's not a problem anymore.

SPACECRAFT Okay, and whatever INCO just did, it stopped the echo.

CAPCOM Okay, we copy that, and if you do tell us there is an echo, he can work on it.

SPACECRAFT Okay, I have 2 more questions PFTA wise, Mary, one is in the summary you sent up, you had an item in there that said DTO repeats or something if required. Do we need to do that?
END OF TAPE

SPACECRAFT Got a few more questions, PFTA wise, Mary, one is in the summary you sent up you had a item in there that said DTO repeats or something, if required. Do we need to do that and also those surveys asked us to go to +ZLV and we want to know if that's going to be okay to do too?

CAPCOM Repeat the second, Dale.

SPACECRAFT The surveys since they are on the bottom on the vehicle, have you go to +ZLV to get the bottom of the vehicle towards the Earth, towards the Earth (garble) and we want to know if you want us to make that maneuver or just look at the bottom with the spotlight on the RMS as required.

CAPCOM Roger, Dale, just a second, we'll check on that. Dale, on your question about attitudes, when you're doing the exterior surveys, you can delete any attitudes that are called out specifically and just remain in -ZLV nose forward. Go ahead and use an auto dap because it's an unloaded arm.

SPACECRAFT Okay, understand so we'll do the surveys just using the lights on the end of the arm now.

CAPCOM Roger, that. And also Dale on your DTO question, there are no DTO repeats required, and we're 18 seconds LOS, we'll talk to you again through Guam at 2 plus 41.

SPACECRAFT Okay, Guam at 2 plus 41 and no repeats, thanks a lot.

PAO Mission Control Houston, 4 days 2 hours 17 minutes Mission Elapsed Time, Challenger out of range of the Botswana station, we'll be picking up in 24 minutes through the Guam station, have a rather long loss of signal period here. At the end of orbit number 66, this is Mission Control. This is Mission Control Houston, at 4 days 2 hours 33 minutes Mission Elapsed Time, we intend to cancel the change-of-shift press conference for the off-going Flight Director Randy Stone, having made a survey and found little interest at this time and we have just completed a press conference on orbit with the crew from the spacecraft. So we are cancelling the change-of-shift press conference that would have been held at approximately 5:00 a.m. this morning. This is Mission Control Houston. This is Mission Control Houston, at 4 days 2 hours 41 minutes Mission Elapsed Time, just a reminder that we have cancelled the change-of-shift press conference with the off-going Flight Director Randy Stone. And we are standing by for acquisition of signal in about 30 seconds through the Guam tracking station, this is Mission Control.

STS-8 AIR/GROUND TRANSCRIPT t208j 246:08:46 09/03/83 PAGE 2

CAPCOM Challenger, this is Houston, with you through Guam for 7 minutes. Challenger, this is Houston, with you through Guam for 6 minutes.

SPACECRAFT Hi, Houston, Challenger's here. And we're just starting to get the setup underway for the PDR's work.

CAPCOM Okay, Dale, we're standing by. Challenger, this is Houston, we're 16 seconds LOS, we'll talk to you again through TDRS at 2:57.

SPACECRAFT Goodbye.

CAPCOM Bye, bye.

PAO Mission Control Houston, loss of signal through Guam, we'll be communicating again with the crew of the Challenger when we pick up the Tracking Data Relay Satellite in about 9 minutes. This is Mission Control Houston.

PAO This is Shuttle Control, at 4 days 2 hours 56 minutes Mission Elapsed Time. Hawaii has acquisition of signal with the Challenger and we'll be locking on to TDRS in about a minute a half.

SPACECRAFT Houston, Challenger, read you loud and clear, how me?

CAPCOM You're loud and clear too, Richard.

SPACECRAFT Okay, we're on page 9-2, just setting up for the direct drive unbus.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t209j 246:09:28 09/03/83 PAGE 1

SPACECRAFT Houston, Challenger, read you loud and clear. How me?

CAPCOM You're loud and clear too, Richard.

SPACECRAFT Okay, we're on page 9-2 just setting up for the direct drive unbus.

CAPCOM Copy that.

PAO We're getting television from Challenger.

SPACECRAFT And Houston, CDR, I have a couple of 3 questions that I'd like to pass on to you, and when it's convenient, you could answer them. One is, does PROP's still think that the jet was a fuel leak. Second, how are we doing on the RCS redline and our RCS consumption and finally on the TV04 this evening for the med TV. I noticed that was scheduled for Hawaii pass, are we able to use the, are we limited to the Hawaii pass and if so, what is the time? or as the corollary is do you plan to use TDRS and not worry about if we run over a little bit? No hurry on the answers because we're keeping on working here.

CAPCOM Okay, Richard, we'll get answers for you.

SPACECRAFT Fine, I appreciate it.

CAPCOM And Challenger, this is Houston, the PROP still does think that that's a very small fuel leak that's caused the deselective L3D and also your RCS redline is 37 extension days so that's a quite a lot there and we're going to leave the TV04 question that you had for the next shift, Orbit Two.

SPACECRAFT We got the first two but not the last comment, Mary, say again.

CAPCOM Your question on TV04, we'll turn over to the Orbit Two Team and they'll talk about it and give you an answer later.

SPACECRAFT Okay, and we have enough food for about 30 days so we'll see you October 1st.

CAPCOM Roger that, I understand Dale wants to come back before he starves.

CAPCOM Challenger, this is Houston, we're 50 seconds LOS out of Hawaii before we turn over to TDRS but we'd just like to say, Bye, we're looking forward to seeing you. I'm afraid that we're going to make the assumption you can't extend for 37 days. Next Orbit Two shift is going to be handled by the Entry Team and so Randy and the rest of the guys on Orbit One and Jeff and I would really like to say it's been fun working with you.

STS-8 AIR/GROUND TRANSCRIPT t209j 246:09:28 09/03/83 PAGE 2

SPACECRAFT Well we sure had a good time too, Mary. Thanks a lot and we'll see you down on the ground.

CAPCOM See you there.

SPACECRAFT Thanks a million, Mary. Ya'll did a super job, appreciate it.

CAPCOM Thanks.

PAO This is Shuttle Control. Hawaii has loss of signal. Here in the Mission Control Center, a handover has taken place. The Orbit Two Team has come on duty with Flight Director, Harold Draughon. Capcoms are John Blaha and Bill Fischer.

CAPCOM Challenger, Houston, the crystal team's with you at TDRS.

SPACECRAFT Hi, John, how's it going?

CAPCOM Going real good. You guys sure did a good job during the conference.

SPACECRAFT It was fun, we enjoyed it. Comm through TDRS was great and we're glad the picture was okay too.

CAPCOM Roger that, Dale.

SPACECRAFT And, Richard's doing the grapple today. He's about, has about 10 inches to go coming on in.

CAPCOM Roger, we're watching.

SPACECRAFT John, we're giving camera D a try again, just to see what is going on. I'm sorry, the elbow camera and there's definitely something loose inside the lens. It's a metal circular ring and we can see notches in it floating around inside there so it's definitely come apart.

CAPCOM Roger, we copy that, Dale.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t210j 246:09:40 09/03/83 PAGE 1

SPACECRAFT I'm sorry the elbow camera, and there's diffently something loose inside the lens. It's a metal circular ring and we can see notches in it floating around inside there. So its definitely come apart.

CAPCOM Roger, we copy that Dale.

SPACECRAFT Houston, CDR, Dale's out of the latches on the direct drive on berth.

CAPCOM Roger, Richard and we're watching that with a very clear picture.

SPACECRAFT Boy when your dark adapted, the sunrise is piercing.

CAPCOM Roger, that.

PAO This is Shuttle Control, 4 days 3 hours 25 minutes Mission Elapsed Time, Challenger is into daylight now over South America on orbit number 67. The crew conducting pretest with the RMS and PFTA continuing to get television through TDRS of this activity. At last report spacecraft commander Dick Truly was at the controls of the RMS.

CAPCOM Challenger, Houston, be advised we're going into a scan limit, we may lose TDRS, if we do we'll see you at Botswana at 3 plus 44.

SPACECRAFT Okay, John see you there, the, as you can see we're unberthed and Dale is getting ready to to the direct drive berth.

CAPCOM Roger that.

PAO This is Shuttle Control, Challenger crossing the African coast now. Approaching the limits of TDRS coverage about a minute and a half to LOS TDRS. This is Shuttle Control, 4 days 3 hours 49 minutes Mission Elapsed Time. We've had LOS TDRS, Challenger is still in acquisition, UHF acquisition at Botswana for another minute and a half.

CAPCOM Challenger Houston we're going LOS Botswana in 25 seconds, see you at Indian Ocean for a short pass in 5 minutes.

SPACECRAFT Things are going slow but sure.

CAPCOM Roger, and if we don't get you at Indian Ocean, we'll see you at Guam in 4 plus 17.

SPACECRAFT Okay.

PAO This is Shuttle Control, Challenger is out of range at Botswana, we really don't expect to pick them up at the Indian Ocean station that very low elevation pass on this orbit. During of that pass would be 22 seconds so more than likely the next tracking station to see Challenger will be Guam in about 25 minutes. We had television reception through TDRS virtually full time from Hawaii to Africa on this orbit number 67. As the crew utilized the remote manipulator system with the PFTA. Grapple was done by spacecraft Commander Dick Truly and then Mission Specialist Dale Gardner took over the controls of the RMS. Earlier Gardner confirmed that they could see a loose metal ring in the lens of the elbow camera, he believes that the lens has come apart.

END OF TAPE

PAO Earlier Gardner confirmed that the they could see a loose metal ring in the lens of the elbow camera means that the lens has come apart. It still provides a picture but it is somewhat obscured. And in a response to a question from Truly as to the status of the reaction control system propellant. The crew was informed that they have enough RCS propellant for 37 extra days so their surplus of that consumable is considerable. At 4 days, 3 hours, 54 minutes mission elapsed time, this is Mission Control, Houston.

PAO This is Shuttle Control, 4 days, 4 hours, 16 minutes mission elapsed time. Challenger will be within range of the Guam tracking station in about 30 seconds.

CAPCOM Challenger, Houston's with you at Guam for 4 minutes.

SPACECRAFT Roger, Houston, loud and clear and Dale is in between the trunions still going down but still has a few inches to go, very slow.

CAPCOM Understand, Richard.

SPACECRAFT And John, the thing that we are finding is that there's a lot of very low damp or almost undamped isolations in Y. So after a couple of inputs, we just have to wait for them to slowly damp out so that we can start again. They go almost from trunion to trunion. And these are with very slow inputs on Dale's part.

CAPCOM Roger, we copy Richard, thanks.

SPACECRAFT Houston, MS3.

CAPCOM Roger, go ahead, Dr. Bill.

SPACECRAFT Might tell biomed's that there is stuff on OBS.

CAPCOM Roger, Bill, can you repeat, please.

SPACECRAFT Roger, John, he said there was some OBS data coming down.

CAPCOM Understand.

CAPCOM Challenger, Houston, we're going LOS here in 20 seconds. We'll see you at Hawaii in 8 minutes.

SPACECRAFT Okay John, see you there.

STS-8 AIR/GROUND TRANSCRIPT t211j 246:10:25 9/3/83 PAGE 2

PAO This is Shuttle Control, Guam has loss of signal. Hawaii is next in about 6 and 1/2 minutes at 4 days, 4 hours, 23 minutes mission elapsed time, this is Shuttle Control, Houston.

PAO This is Shuttle Control, 4 days, 4 hours, 30 minutes.

CAPCOM Houston is with you at Hawaii for 6 and 1/2 minutes.

PAO Challenger about a minute and a half away from TDRS AOS.

SPACECRAFT Well, actually when we took the brakes off after 3 or 4 seconds, a couple of them went barberpole again and (garble).

CAPCOM Roger. And Challenger, Houston, we need to warm up the MADS, if somebody back by A7L could take the strain gage and put it to on, please.

SPACECRAFT Roger, John, the MADS strain gage is on.

CAPCOM Roger and if it was already in that position, Richard, if you could cycle it please, we're showing it not in that position.

SPACECRAFT Negative, it was in PCM enable.

CAPCOM Okay, thanks a lot.

SPACECRAFT Houston, CDR. Each time that Dale gets 4 grays when it takes the brakes off, I'm sorry when he puts the brakes on. Yes, each time that Dale takes the brakes off to go to test mode, one of the latches pops out. We can - -

END OF TAPE 1

SPACECRAFT --to go to test mode one of the latches pops out, we can keep the 4 grays with the brakes on and we suggest doing what we did yesterday and that is with 4 grays and the brakes on, go ahead and latch.

CAPCOM Roger, we concur, Richard.

SPACECRAFT Okay, that will save us a lot of time, we, I don't know how long this would take. Okay, Houston, we latched the keel latch and about a second before the keel latch talkback went gray we lost the ready to latch on number 3. One, 2 and 4 ready to latch are still bright.

CAPCOM Roger, we copy, Richard.

SPACECRAFT And Houston, do you concur we should proceed or back out?

CAPCOM Stand by, Richard.

SPACECRAFT Okay, no problem.

CAPCOM Roger, Richard, we recommend you drive 1 and 4.

SPACECRAFT Okay, drive 1 and 4 and then watch to see what 2 and 3 do.

CAPCOM That's affirmative, Dale.

SPACECRAFT Okay, here we go. That was a good call and 1 and 4 started tightening down, 3 came back in, we have 5 grays right now.

CAPCOM Roger, that was RMU, Dale.

SPACECRAFT Going to test mode now to lift the arm. Okay, Houston, Dale is ungrappled and it looked like there were barely any loads at all on it, we were, we recorded it on the wrist camera and it came straight out.

CAPCOM Roger that Richard thanks.

SPACECRAFT And Houston, we're going to go back to ZLV.

CAPCOM Roger that.

SPACECRAFT And Houston, Challenger, you still with us?

CAPCOM Roger, still with you, Dale.

SPACECRAFT Okay, John, we've started the unloaded auto sequence. I don't know if you guys timed the direct berthing, I

think it was something around an hour, I don't think I wrote down the start time but it was the best part of an hour.

CAPCOM Roger Dale, and we'll confirm that in the transcript you called out when you were starting the berth maneuver.

SPACECRAFT Okay, and as Richard mentioned the main problem of course were isolation, just sitting there waiting for them to, for them to cancel out so we could tell what our attitudes in XYZ's were. The other part was of course, without the elbow camera, we had no, no way of really telling that and we had to use some tricks and fish around and try to find the guides, it took a little while. We did not use any digitals by the way, it was just cameras D and C and what we could see with our eyes.

CAPCOM Roger, Dale, we copy and we show 1 hour and 10 minutes and understand your comments.

SPACECRAFT Okay, (garble).

PAO This is Shuttle Control, Challenger coming into sunrise now.

CAPCOM Challenger Houston, we are receiving a beautiful picture of your sunrise down here, thanks a lot.

SPACECRAFT Yes, we see you watching that.

CAPCOM I bet you do. This TDRS is really a neat thing.

SPACECRAFT Bet you a nickel your TV view is not as pretty as our window view, John.

CAPCOM Roger, Richard, but its a lot better than it was before we had the TDRS.

PAO This is Shuttle Control, 4 days 4 hours 57 minutes Mission Elapsed Time. Challenger crossing the west coast of South America now. On orbit 68.

CAPCOM Challenger, Houston's with you at Botswana for 5 minutes and I have an overall plan here for you, Richard, when you're ready to listen.

END OF TAPE

END
DATE
FILMED

OCT 27

1 183



National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

STS-8 AIR GROUND TRANSCRIPT
VOL. III
MET 04:05:26 THROUGH LANDING

PUBLIC INFORMATION OFFICE
NASA JOHNSON SPACE CENTER
HOUSTON, TEXAS 77058

CAPCOM Challenger, Houston is with you at Botswana for 5 minutes and I have an overall plan here for you, Richard, when you're ready to listen.

SPACECRAFT Roger, let me, okay go ahead.

CAPCOM Okay, Richard, the upcoming Hawaii TV pass will be on schedule, the basic plan will be to TV thru Hawaii and during the pass about 2 to 3 minutes in the pass, we will handover to TDRS. Total TV time available will be about 27 minutes. We would like you to continue your RMS testing in the order you have on your message and at 5 plus 30 we would like you to start berthing and powering down. If some activities don't get completed that's okay with us. What we're trying to do here is protect about 20 minutes for you to get ready for Dr. Bill's TV show. If you have any other changes to that we would go along with your suggestions.

SPACECRAFT Roger, Jon. I think that is fine with us. We are, we've completed the unloaded auto sequence, and we've gone ahead and we're in the midst, as a matter of fact we've almost completed exterior survey Juliet, which I think you'll enjoy later on if we get a chance to downlink it to you. Since it's about 5:20 now, I don't know whether, as a matter of fact I don't think we'll have time to do another survey, so we'll either have to miss out on surveys bravo and Charlie or reschedule it tomorrow maybe, or whatever you'd like to do.

CAPCOM We understand Richard, and that's fine with us to go ahead and berth the arm.

SPACECRAFT Okay, and sometime this evening, you might make plans to, if you'd like, to look at this survey, it really is a very capable look at the bottom.

CAPCOM Roger, we would like to do that and will.

SPACECRAFT Okay, super. We'll work till 5:30, and go ahead and berth and then be ready for the Hawaii pass. What time is Hawaii AOS?

CAPCOM Yes sir, Hawaii is 6 plus 04.

SPACECRAFT Super plan, Jon. Thanks alot, appreciate your updating us.

CAPCOM Yes sir. And Challenger, Houston. We're going to be going LOS in 10 seconds, we'll see you at Indian Ocean in 2 minutes.

STS-8 AIR/GROUND TRANSCRIPT t213j 246:11:33 09/03/83 PAGE 2

SPACECRAFT Roger, Jon. And we're zoomed in on the states, that says United States underneath the radiator. We're at the bottom of page 5-28, backing out for the berth.

CAPCOM Yes sir.

PAO This is Shuttle control at 4 days, 5 hours, 26 minutes mission elapsed time. The Indian Ocean station will pick Challenger up in about 45 seconds. Crew in the process now of securing the RMS operations and preparing for a biomedical TV pass scheduled to begin at Hawaii.

CAPCOM Challenger, Houston is with you at Indian Ocean for 6-1/2 minutes.

SPACECRAFT Roger, Houston. And we're in the RMS powerdown procedure now.

CAPCOM Roger that. Challenger, Houston, if you have a second, if you could give us any comments on whether you are experiencing any of the hesitations in driving the elbow in the single mode that you experienced when you were loaded.

SPACECRAFT As a matter of fact, absolutely not, it's smooth as silk.

CAPCOM Roger, understand. And Challenger, Houston, I have a flight note for you if somebody is ready to copy, reference the WMS.

SPACECRAFT Okay, Jon. Roger Jon, go ahead.

CAPCOM Okay, Richard, basically . . .

END OF TAPE

CAPCOM flight note for you if somebody is ready to copy, reference the WMS.

SPACECRAFT Standby. Roger, John, go ahead.

CAPCOM Okay, Richard. Basically, what we have here is a procedure to plan, see if we can't isolate that slight leak a little bit. And to do that, we would like you to first place the foot platform in the lowest position. Second, cut a 3 inch square from a plastic cover off of any FDF book. Third, using gray tape, seal the cover over the WCS vent screen opening, and that's the opening that's behind the outboard foot platform, on the upper right side of the WCS front face.

SPACECRAFT Okay, well, I didn't write it down, let me go look at it and make sure I know what you're talking about, hang on.

CAPCOM Roger.

SPACECRAFT Okay, yes. There's a little circular screen on the outboard side of the foot restraint, I understand.

CAPCOM Okay. Fourth, verify that the WCS vacuum valve is open, and notify us when that procedure is complete. If this works, we'll give you another procedure to work with it. If it doesn't, we'll go back to the procedure you have been using today. And don't let this interfere with your TV pass coming up, we'll see you at Hawaii at 6 plus 04.

SPACECRAFT Super, John, we'll see you at Hawaii.

CAPCOM Roger, that.

PAO This is Shuttle control, the Indian Ocean station has loss of signal with Challenger. Next acquisition Hawaii in 29 and 1/2 minutes. At 4 days, 5 hours, 34 minutes, mission elapsed time, this is Shuttle control, Houston. This is Shuttle control, 4 days, 6 hours, 3 minutes, mission elapsed time. Standing by for acquisition at Hawaii with handover to TDRS about 2 minutes later. We expect TV during this pass.

CAPCOM Challenger, Houston with you at Hawaii and we have two questions here before we get started with the TV. First, do you have the WMS configuration established?

SPACECRAFT We have not done the taping that you asked, as of now, John.

CAPCOM Okay, that's fine, Richard. Before you do that procedure, be aware of a caution, do not operate the WCS in any mode with the plastic cover in place.

SPACECRAFT Okay, understand.

CAPCOM And Richard, you can use it by removing the cover and then performing the normal WCS ops, and then replacing the cover again.

SPACECRAFT Roger, understand, we'll tie a red string between the cover and the operating equipment.

CAPCOM Roger, red string. And Richard, just another note for you, your cabin pressure is close to a caution/warning limit. If it goes off, you can either live with the alarm, or you can go ahead and reset the caution and warning limit as you did yesterday.

SPACECRAFT Okay. How soon would you expect that it might trigger, we lowered it a 10th here so we don't have to put up with it, in the next few minutes?

CAPCOM Roger, we're working on an answer for you, Richard.

SPACECRAFT And, Houston, CDR, if we didn't get a chance to talk with INCO, but we'll control the camera selections, but we'll leave the tail switch in command.

CAPCOM Roger, we understand and concur.

SPACECRAFT Okay.

CAPCOM Roger, Richard, you have about a, we think, about a half an hour before that C&W would go off.

End of tape

STS-8 AIR/GROUND TRANSCRIPT t215j 246:12:37 9/3/83 PAGE 1

CAPCOM Roger, we understand and concur.

SPACECRAFT Okay.

CAPCOM Roger, Richard. You have about, we think, about a half hour before that C&W would go off.

SPACECRAFT Roger, no problem.

CAPCOM And Richard, one more thing. We assume that you will be selecting the cameras for downlink.

SPACECRAFT That's affirm.

CAPCOM Roger that. That's okay. We're ready to go with you.

SPACECRAFT Okay, super. Tell me when you have a picture in the middeck and we'll get started.

CAPCOM Roger, we have an excellent picture of the middeck. And we are not receiving Dr. Bill.

SPACECRAFT I am Dr. Bill Thornton and I've been put on STS-8 as part of a joint effort between flight operations and flight medicine to look at some of the changes in the human body as it adapts to the weightlessness of space flight. As you are all aware, we have the latest in equipment to fly in space but we are flying with a body that is designed for lg. It's rather remarkable that it adapts the way that it does, but adapt it does. However, there are still a few changes that we would like to know about, particularly in the neurological system. We have looked, for example, at the cardiovascular system at some of the other areas so we're looking at the neurological system primarily on this flight. You may notice a couple of electrodes here on my head. This, I just finished up doing a study by Miss Wendy Angelo, who is a high school student. She goes to Franklin D. Roosevelt High School, Hyde Park, New York and she proposed a biofeedback study to see if biofeedback was affected by weightlessness. This was selected and implemented by NASA and this is one of the items that I have been doing. Now we have a whole series of the studies and would like to show you just various bits and pieces. As you all know, we always have to be aware of which way is up and down on earth, but here, there is no up or down and so the nervous system has to adapt to that. Now, in addition to gravity telling us which way up and down it is, always constantly pulling on us, we've developed large legs to get around with, this effects the cardiovascular system, we have to have fairly large cardiovascular systems to support that, and many other aspects of the body.

CAPCOM Challenger, Houston, break, break.

SPACECRAFT We have learned to cope for example, with the changes in the cardiovascular ...

CAPCOM Challenger, Houston, break break.

SPACECRAFT ... weightlessness, we no longer have orthostetic hypertenseion i.e., that tendons to the frame.

CAPCOM Roger, Challenger. We need the encryption select to TR please.

SPACECRAFT Copy that. And as part of this, we have for example, put on a treadmill and here Guy Bluford will demonstrate this. In addition to the treadmill, Guy is also wearing some instruments which are standard on earth, but have been modified for our purposes. These I wore on launch and the first day, will wear on reentry. This small tape recorder, for example, was recording my eye and hand motions. On this side, we are able to record blood pressure, heart rate, and Guy has been making pretty good use of this treadmill.

SPACECRAFT By the way, we owe you a lot of credit to various people for developing these devices and to Henry Whitmore. He's certainly done an excellent job on this experiment, which was flown most of the flight on STS, and Guy is giving it a good workout. So Guy, why don't you go ahead and show us what you've been doing.

SPACECRAFT Now, as I indicated, we could record blood pressure and ...

END OF TAPE

SPACECRAFT Now as I indicated, we could record blood pressure and other items on the recorders for study when we return to 1-g, but we have been recording vital signs of particular interest to the neurological system. Now, in addition . . . muscular skeletal system changing . . .

CAPCOM And Dr. Bill, we're not reading you.

SPACECRAFT . . . faces are rather broad and puffy. They're really (garble). Part of the fluid goes overboard and part of it moves, part of it moves upward. Now in order to study this in further detail, since we felt that it was possible that this shift of fluid to the head was causing trouble, then Dale Gardner is modeling the latest in leg wear that we have up here and this stocking has some special tapes on it, which, when it's pulled into place, we then simply pull these . . . He's probably lost a litre or a litre and a half of fluid, and so our real interest though, is looking at this as it may affect the head and components of the nervous system in the head. Here I'd particularly like to thank Dr. Tom Moore and a number of others that have worked on this particular aspect of the project. Now looking at the nervous system directly, the eyes give us a particularly good insight into the way our balance mechanism works and any of you around JSC may have seen or may have seen some of the electrodes and things that we have been using, but by putting electrodes beside the eye, such as we have here on Dan Brandenstein, here we have the electrodes that are picking up eye motion and, in addition, we have a small gyro fired from a missile by the way, that is on his head, so as he makes head motions, we can study the way the eyes move, and are also recording head motion here. In addition, just stand still now for a second, we can just float him freely and make movements with him, recording him a completely free motion such as he undergoes. These records then will give us a record of the function of the nervous system as it controls the eyes which is a particularly complex part of the system. Now finally, to . . . the nervous system, we resort to other techniques and since Commanders always have very large brains, we're using Commander Truly to demonstrate this. We are now putting some small electrodes on the scalp which will pick up the brain waves directly. In addition, we then put signals into the body, it may be either clicks that he listens to in the ear, or in this case, we have visible signals, and then by flashing, in this case, flashing the lights repeatedly and recording these brainwaves on a small tape recorder, we can bring them back, run them through, and actually watch these signals as they progress thru the brain. If changes are occurring this will allow us to spot any functional changes and here - I happen to have the electrodes here, the little amplifier which goes to an ordinary 2-channel recorder, and then we let Dick watch the scene, the simple flashing lights goes thru the optic nerve, up into the brain and we can literally track these well into the brain itself. Now

STS-8 AIR/GROUND TRANSCRIPT t216j 246:12:43 09/03/83 Page 2

there are a number of other items that we have onboard, but all
of the . . .

END OF TAPE

SPACECRAFT ... flashing lights, goes through the optic nerve, up into the brain, and we can literally track these well into the brain itself. Now, there are a number of other items that we have onboard, but all of these are aimed to give us a better understanding of the way weightlessness is effecting the nervous system and ...

SPACECRAFT Roger, Bill. Let me say a couple of words too, if I may. As you can see, the addition to Bill Thornton to our crew just a few months before, was a significant addition to the objectives of this mission. Most of the equipment that you've seen, and most of the work that he has done, has been done by himself and I can assure you on this flight despite the INSAT deploy and the work on the CFES and the work that Dale Gardner has done on the RMS and the PFTA, that the hardest working individual onboard has been Bill. Most of the equipment is his, and he really deserves credit for a tremendous research program that he's working in space. We're not quite through however, with the TV show, and over the months we've had to put up with, what we've called, Bill's chamber of horrors. So we have a little measurement program of our own. If you'll just bear with me, we'll show it to you.

CAPCOM Roger, we're waiting for it Richard.

SPACECRAFT Well, Houston, thanks very much for listening, and hope you've enjoyed the show. See you later.

CAPCOM Roger that Richard. It was a great show. Thanks a lot.

SPACECRAFT Houston, CDR.

CAPCOM Roger Richard.

SPACECRAFT Roger, John. Why don't we avoid the cabin pressure C&W first, what procedure would you like us to use to pump up the cabin.

CAPCOM Roger, Richard. Go to the orbit ops with the reset caution and warning limits.

SPACECRAFT Okay, we'll do that one real quick and then we will do the WCS procedure right away.

CAPCOM Roger, and let us know when you are finished with that WCS, Richard.

SPACECRAFT Okay. Houston, CDR.

CAPCOM This is Houston. Go ahead.

SPACECRAFT Roger, I hate to ask you again for clarification, but on this manual cabin atmosphere, was it - I thought you said reset C&W limits was the procedure and looking at it, is it the set C&W limits procedure that you want?

CAPCOM Standby a sec.

SPACECRAFT Okay.

CAPCOM Challenger, Houston.

SPACECRAFT Go.

CAPCOM Roger. It's the set C&W limit portion, not the reset on 5-10, that we'd like you to follow.

SPACECRAFT Okay, maybe that's what - maybe John said the set and I thought he said reset. Okay, not to worry. I'll get - I'm in the middle of it now.

CAPCOM Roger.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead, Richard.

SPACECRAFT First, we've got to give you another knit problem to work, that's slowing me down on this one. Back on CRT - well I take it back. Disregard, I was making a keystroke here and thought it was some kind of a fault, hang on.

CAPCOM Roger. Challenger, Houston. Back with you on TDRS.

SPACECRAFT Roger, Houston. Houston, CDR.

CAPCOM This is Houston, go ahead Richard.

SPACECRAFT Roger, a couple of things. I'm going to ...

END OF TAPE

SPACECRAFT Roger, I hate to ask you again for clarification, but on this manual cabin atmosphere, was it - I thought you said reset C&W limits was the procedure and looking at it, is it the set C&W limits procedure that you want?

CAPCOM Standby a sec.

SPACECRAFT Okay.

CAPCOM Challenger, Houston.

SPACECRAFT Go.

CAPCOM Roger. It's the set C&W limit portion, not the reset on 5-10, that we'd like you to follow.

SPACECRAFT Okay, maybe that's what - maybe John said the set and I thought he said reset. Okay, not to worry. I'll get - I'm in the middle of it now.

CAPCOM Roger.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead, Richard.

SPACECRAFT First, we've got to give you another knit problem to work, that's slowing me down on this one. Back on CRT - well I take it back. Disregard, I was making a keystroke here and thought it was some kind of a fault, hang on.

CAPCOM Roger. Challenger, Houston. Back with you on TDRS.

SPACECRAFT Roger, Houston. Houston, CDR.

CAPCOM This is Houston, go ahead Richard.

SPACECRAFT Roger, a couple of things. I'm going to ...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t218j 246:13:16 09/03/83 Page 2

guides get wider as you come up so, the fact that we didn't have any, any way of telling X wasn't really too much of a problem. I don't how long it took, but it wasn't too bad. We already talked a little bit about the direct berth not having the D, the elbow camera was a severe detriment and what we ended up doing was to get X, was keeping in some negative pitch on the PETA, that looking at the aft guide with the aft cameras ...

END OF TAPE

SPACECRAFT Houston, CDR.

CAPCOM This is Houston, go ahead Richard.

SPACECRAFT Roger, a couple of things. I'm going to jack up the PPO2 limits just so we don't have some C&W's here as they toggle around the 3.4 limit just for awhile, and prior to going to bed, I'll put them back at 3.4. And we're recording some stuff on middeck TV that I'm assuming that you're not going to be ...

CAPCOM Challenger, Houston. Richard, the part of your transmission following the middeck TV was lost. Can you repeat? Challenger, Houston. Richard, you were cut out, can you repeat the last part of your transmission?

SPACECRAFT Roger, it's just that for the next 15 ... downlink TV from the cabin.

CAPCOM Standby, Richard. We're still having some intermittent TDRS problems. Challenger, Houston. Challenger, Houston.

SPACECRAFT This is Challenger.

CAPCOM Challenger, Houston. How copy? Challenger, Houston. Back with you on TDRS, how copy?

SPACECRAFT Loud and clear, Fish.

CAPCOM Roger, Dale. We didn't get to hear the end of Richard's transmission but, if I understood him correctly, he was asking if we were going to need the middeck TV camera. We are not for this rev. Also, we copied his transmission about raising the PPO2 limits from 3.4 to 3.6 but it doesn't look like he will need to lower those back to 3.4 at presleep. He can leave them at 3.6 as far as we can tell right now.

SPACECRAFT Okay, that's great. Now you can disregard about the middeck, the question about the middeck TV. I do have a view operating the TV. We're over Africa at the moment and camera Charlie is pointing ahead of the bird.

CAPCOM Roger.

SPACECRAFT Fish, if you have a few minutes we can give you an RMS summary for the day.

CAPCOM Roger, go ahead Dale. We're ready to copy.

SPACECRAFT Okay, we set it out with direct unberth. That went pretty nominally. It was fairly easy, of course, you know the

SPACECRAFT ... was a severe detriment and what we ended up doing was to get X was keeping in some negative pitch on the PFTA such that looking at the aft guides with the aft cameras, we knew those trunions would be getting down to the guides first and then we just sat there and fished around until we got the aft trunions into those guides, then took the pitch out knowing that front guides would, front trunions would drop in. Then, of course, we mentioned the oscillations were the main problem, sometimes we'd have to sit and wait 15, 20, or 30 seconds to input the damp out to see what we have and figure out our next move. However, the operation of the arm was excellent throughout all that, responses, responding normal to all inputs, the joints always went the direction I expected them to . . .

CAPCOM Dale, we're 10 seconds LOS. See you at IOS at 7 plus 01.

PAO This is Shuttle Control, at 4 days, 6 hours, 58 minutes mission elapsed time, we've had loss of signal thru TDRS, the Indian Ocean Station will lock onto Challenger in about 2 minutes 45 seconds, we'll standby for that.

CAPCOM Challenger, Houston with you thru Indian Ocean UHF for 6 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM Roger, Richard, and when you're ready, I have a short flight note on your EOIM activation procedures.

SPACECRAFT Roger, go ahead.

CAPCOM Richard, before I do that we'd like you to take your encryption switch back to bypass.

SPACECRAFT Wilco, got that.

CAPCOM Roger, the current EOIM activation procedures that you have in your checklist call for the heaters to be turned on first, and it appears that's masking some of our data. What we'd like you to do for subsequent EOIM activations is to reverse the procedures on page FS5-3 of the, excuse me FS3-3 of the orbit ops checklist. Specifically, you will first do the grid on, and then UV on, and the last step will be your EIOM heater on. We would also like you wait 15 seconds between each switch throwing.

SPACECRAFT Okay Fisher, copied that for activating the EOIM start at the ...

CAPCOM Negative, 15 seconds Dan, and we would like you to do the EIOM activation over AGO on rev 70. 8 plus 05.

STS-8 AIR/GROUND TRANSCRIPT t219j 246:13:28 09/03/83 PAGE 2

SPACECRAFT (garble) over and it should be, looks like an air-tight seal, can't guarantee it.

CAPCOM Roger, Dan. Did you happen to notice when you placed the plastic onto that area, whether there was any suction that held the plastic on there?

SPACECRAFT I'll tell you what, I didn't use any plastic because the screw head was sticking out and figured I wouldn't get a seal, so I just used multiple coverings of gray tapes, and tried to seal it on good.

CAPCOM Okay Roger, and again just a reminder that if you use the WCS you've got to remove that tape, follow your normal procedures, and then replace it when you're through.

SPACECRAFT Roger, and I don't know how suction to expect, but it appears that the tape is drawing in a little bit.

CAPCOM Roger, Dan, we're going to watch down here and should have an answer for you shortly.

SPACECRAFT Thank you.

CAPCOM Challenger, Houston we're one minute to LOS, we'll see you at Hawaii at 7 plus 39.

SPACECRAFT Thank you Houston, and Fish did you copy Dale's comment about the availability of the Orbiter inspection he's been getting on the (garble)?

CAPCOM Roger, we did Richard, we'd like to have you place that Juliet survey on rev 70 so we can have a chance to look at it down here.

SPACECRAFT Any time.

CAPCOM Roger, it will be just after Hawaii.

PAO This is Shuttle Control, Indian Ocean station has loss of signal with Challenger, next acquisition is Hawaii in 29-1/2 . . .

END OF TAPE

PAO This is Shuttle control. Indian Ocean station has loss of signal with Challenger. Next acquisition is Hawaii in 29-1/2 minutes. At 4 days 7 hours 9 minutes mission elapsed time, this is Shuttle Control Houston. This is Shuttle Control at 4 days 7 hours 38 minutes mission elapsed time. We're standing by for acquisition through Hawaii.

CAPCOM Challenger, Houston, with you through Hawaii for 3 minutes.

SPACECRAFT Roger, Houston. Loud and clear. How us?

CAPCOM Got you loud and clear.

SPACECRAFT And Houston, we're in the roll startrack align, there are 3 stars in the table that GNC can look at. We've started a fuel cell purge. Dan is going to try - Dan is taping the aft windows so we can do a little night photography this evening.

CAPCOM Roger, we copy and be advised about 5 minutes after Hawaii LOS we should be ready for your VTR dump on configuration Juliet survey.

SPACECRAFT Oh, okay. We'll set her up and be ready. And Fish, had a little extra time so I fired up the HRM again tonight with a start time of 4 days 7 hours and 26 minutes.

CAPCOM Roger, copy Dan.

SPACECRAFT And Houston, Challenger. How much supply water would you like dumped tonight?

CAPCOM Dan, we're going to be asking you to dump 30 percent tonight out of tank B and tank bravo and we're 45 seconds LOS. We would like you to take your encryption switch to TR and we will see you on TDRS.

SPACECRAFT Roger, we missed what you said about the dump. Why don't you tell us when we get on TDRS.

CAPCOM Roger, Richard. It'll be 30 or 30 percent from tank bravo.

SPACECRAFT Okay, tank bravo, 30 percent.

CAPCOM Challenger, Houston, through TDRS. How copy?

SPACECRAFT Roger, Houston. Loud and clear.

CAPCOM Roger, Richard. Before we get the VTR dump from you, let me give you a little update on the WMS problem. It

appears that our attempt at taping did not fix the leak and what we would like you to do for the remainder of your flight is as follows. We would like for you to remove and discard the tape that Dan put on covering the WMS vent screen, then we would like you to take the vacuum valve to closed and leave it closed during your sleep period including any periods of crew use. You should use nominal operating procedures of the WMS otherwise. Tomorrow we'll get back with you, we will probably ask you to open the valve during the crew day but standby for our input on that, over.

SPACECRAFT You said with the vacuum valve closed at night and we'll remove the tape. We intend - and you intend to operate the system with the vacuum valve open during the day but you'd like us to check with you.

CAPCOM Roger, I think you - we missed the first part of that, Richard, but I think you got it all there. Challenger, Houston.

SPACECRAFT Houston, Challenger, go ahead.

CAPCOM Roger, I have two more presleep flight notes for you when you are ready to copy.

SPACECRAFT Okay, go ahead.

CAPCOM Roger. For tonight's LiOH changeout, the standard CO2 buildup that we've seen occurring in the past is also occurring on your flight. For tonight's activities, we would like you to change out two LiOH canisters as follows. We would like for you to do the normal changeout canister 10 into bravo, that's canister 1-0 into bravo and the additional changeout will be canister 25 into alpha and all subsequent changeouts will be per your cue card.

SPACECRAFT Okay, understand. Tonight only, changeout 2 canisters, number 10 into bravo and number 25 into alpha.

CAPCOM Good readback, Richard. And the second message deals with your cryo heater reconfig.

END OF TAPE

CAPCOM . . . will be cannister 25 into alpha. And all subsequent changeouts will be per your cue card.

SPACECRAFT Okay, understand. Tonight only change out 2 canisters number 10 into bravo, and number 25 into alpha.

CAPCOM Good readback Richard, and the second message deals with your cyro heater reconfig.

SPACECRAFT Okay, go.

CAPCOM Roger, 02 tank 3 heater alpha to auto, and H2 tank 3 heater alpha and bravo 2 to auto.

SPACECRAFT Okay, and do you want that now?

CAPCOM Richard now is fine, at your convenience.

SPACECRAFT Houston, Challenger, are you reading me?

CAPCOM Roger, Richard we did, and now would be fine, it's okay at your convenience.

SPACECRAFT Okay, I'm right there.

CAPCOM Challenger, Houston, just be advised, we're going to standby for the VTR dump, we're going to go into some Ku-band blockage, and we'll let you know as soon as we're ready.

SPACECRAFT Roger, understand . . . I'm assuming that is primarily . . .

CAPCOM Challenger, if you copy you're broken Richard, it'll probably be a few minutes when we've got you back on TRDS.

CAPCOM Challenger, Houston, how copy?

SPACECRAFT Loud and clear, how us? Houston, Challenger, how do you read?

CAPCOM We hear you Richard, standby. Challenger, Houston, we have a correction to the LiOH canister message. It will be normal changeout, canister 11 into alpha, and the additional changeout will be canister 25 into bravo.

SPACECRAFT Okay, the change is 11 instead of 10, correct?

CAPCOM Roger, plus canister 25 goes into bravo instead of into alpha.

SPACECRAFT Okay, let me find the piece of paper again. Okay, Fish, let me try it again. 11 into alpha and 25 into bravo.

SPACECRAFT Roger, good readback, Richard, and we're having a little trouble with the Ku-band antenna, we may not be able to get that VTR dump, but if we're able to, we'll give you a call.

SPACECRAFT Roger, understand, and you know it's no big thing, I just thought . . .

CAPCOM Roger.

SPACECRAFT Houston, Challenger,

CAPCOM Go ahead Dan, this is Houston.

SPACECRAFT Okay, just letting you know that if you wanted to watch starting up . . .

CAPCOM Daniel you were broken, go ahead. Challenger, Houston.

SPACECRAFT Go ahead.

CAPCOM Roger, Dan, your last transmission was broken.

SPACECRAFT Okay, I just said I was firing up the EOIM.

CAPCOM Roger, Dan, we're ready when you are.

SPACECRAFT plus 05

CAPCOM Roger Dan, we're ready. Challenger, Houston.

SPACECRAFT Roger, go ahead.

CAPCOM Roger Richard, you can go ahead and close the vacuum vent valve on the WMS now, we'd like to stop the leak if we can.

SPACECRAFT Okay. Okay and Houston, CDR, did you copy my question about the vacuum vent valve?

CAPCOM Negative, Richard.

SPACECRAFT Roger, I wanted EECOM just to remind Dan and me the - it's primarily for odor control, is that correct?

CAPCOM Standby, Richard. Challenger, Houston, that's affirmative, Richard.

SPACECRAFT We didn't have any odor problems at all, and I'm assuming and I'm hoping that when we get up in the morning we can open it just to prevent any.

STS-8 AIR/GROUND TRANSCRIPT t221j 246:14:27 09/03/83 PAGE 3

CAPCOM Roger, Richard, we hope to be able to give you the
go to do that.

END OF TAPE

SPACECRAFT ... get up in the morning we can reopen it just to prevent any.

CAPCOM Roger, Richard. We hope to be able to give you the go to do that. Challenger, Houston.

SPACECRAFT Houston, Challenger, go ahead. Houston, Challenger. How do you read?

CAPCOM Challenger, Houston. Read you loud and clear, Richard. Just wanted to clarify something relating to your last question. It is - the vacuum vent valve is related to odor but as you probably know the reason we're closing it is that it's downstream of the gate valve and we think the leak is in the O-ring seal of the gate valve.

SPACECRAFT Roger, I understand. Yes, I understand that. I just wanted to make sure that we understood the consequences of having to fly with it closed.

CAPCOM Roger, we copy.

SPACECRAFT And no problem either. We're doing the right thing, I just wanted to understand it.

CAPCOM Roger. Challenger, Houston.

SPACECRAFT Go ahead, Fish.

CAPCOM Roger, Dale. We're about a minute LOS, TDRS. We will see you again at Guam at 9 + 01 and we'd like for you to take your encryption switch back to bypass.

SPACECRAFT Okay, back to bypass, see you at Guam 901.

CAPCOM Roger.

PAO This is Shuttle Control. We've had LOS TDRS.

CAPCOM Challenger, Houston.

PAO We've had loss of signal with TDRS. Next acquisition through Guam in 27-1/2 minutes. At 4 days 8 hours 33 minutes, mission elapsed time, this is Shuttle Control Houston. This is Shuttle control at 4 days 9 hours 0 minutes standing by for acquisition through Guam.

CAPCOM Challenger, Houston, AOS Guam for 3 minutes.

SPACECRAFT Roger, Houston, loud and clear. We were - sorry for the delay. Dan and I are in the aft in the dark taking some glow photography.

STS-8 AIR/GROUND TRANSCRIPT t222j 246:14:41 09/03/83 PAGE 2

CAPCOM Roger, Richard. If it's convenient, we'd like you to give us the position of your encryption switch.

SPACECRAFT It's in bypass.

CAPCOM Okay, roger. We're showing it encrypted down here. I wonder if you could give it a cycle and then put it back to bypass.

SPACECRAFT Okay, how about that.

CAPCOM And Challenger, Houston, that cleared it down here.

SPACECRAFT Okay. I'm not sure what's going on with that switch, Fish but it was in bypass.

CAPCOM Roger, that's number 2 for that switch, we're working on it down here.

SPACECRAFT Roger, okay. Fish, are you ready for the TSR report of the day?

CAPCOM Yes, Bill. Give us about 30 seconds and then we'll be ready for your report. Challenger, Houston. Briefly during the last TDRS pass, we saw a load on AC1 single phase and we haven't seen it on past flights. Have you folks been doing anything that might explain that?

SPACECRAFT Well, let's see. They've been using - the MS's are downstairs using the movie light. I don't know what it's plugged into.

CAPCOM Roger, we'll check into it.

SPACECRAFT Standby. Okay, it's plugged into M052 Juliet. Roger, it's plugged into M052 Juliet, whatever ...

END OF TAPE

CAPCOM Challenger, Houston. Briefly during the last TDRS pass we saw a load on AC1 single phase and we haven't seen it on past flights. Have you folks been doing anything that might explain that?

SPACECRAFT Well, let's see. They've been using - the MS's are downstairs using the movie light. I don't know what it's plugged into.

CAPCOM Roger, we'll check into it.

SPACECRAFT Standby. Okay, it's plugged into MO52 Juliet. Roger, it's plugged into MO52 Juliet, whatever power that is.

CAPCOM Roger, we copy. And we're ready for Bill's report. We're only a minute from LOS though. It might be better if we waited until we got him back on TDRS.

SPACECRAFT Okay, why don't we do that? (Garble)

CAPCOM Roger, Richard. And just let you know your state vector is go for the next PLS on rev 81 and you're TIG would be 5 days 0 hours, 36 minutes.

SPACECRAFT Roger, I understand.

CAPCOM And Challenger, Houston, we're going to be LOS 5 seconds, TDRS in 11 minutes and we'll look forward to hearing you, Bill.

SPACECRAFT Okay, see you there.

PAO This is Shuttle control. Challenger has moved out of range at Guam. TDRS will lockup with Challenger in about - just over 10 minutes. At 4 days 9 hours 6 minutes mission elapsed time, this is Shuttle Control Houston.

CAPCOM Challenger, Houston through TDRS how copy?
Challenger, Houston through TDRS. How copy.

SPACECRAFT Houston, (garble) on me.

CAPCOM Roger, you're a bit broken but I think I heard Dan.

SPACECRAFT That's affirmative.

CAPCOM Roger, Dan. If you folks are still willing, in a few minutes we'll be able to receive that survey Juliet VTR dump. If you'd rather wait that's up to you. We're also ready for Dr. Bill's commentary any time he's ready.

STS-8 AIR/GROUND TRANSCRIPT t223j 246:15:35 09/03/83 PAGE 2

SPACECRAFT Okay, we'll take care of both of those. Okay, first Bill will tell you his stuff, and then Dale will show you the tape.

CAPCOM Roger, and we've got to give you a go. We're not quite ready for the VTR so wait for our call and we're ready for Bill.

SPACECRAFT Okay, Fish, here comes Bill.

SPACECRAFT Yes, Fish. The contact lens DSO was done this morning along with oculatometry, you can tell Dr. Poole that that worked quite well. The fluid sampling continuous fluid sampling has been continued. Trying a couple of leg volumes done 3 audio-evoked potentials. We've done 3 regular EOG's, couple of variations. Checked out the ...

CAPCOM Challenger, Houston. Bill you're fading out. Give it another try.

SPACECRAFT ... did Wendy's biobeeback, did some additional biological sampling and looked at our friendly animals, went over them again, and just a minute and I'll give you some times on the OBS data that came down, standby for that.

CAPCOM Roger, Bill. And you were cut out between the information you gave us on 3 EOG's and the biofeedbacks if you can fill that in for us.

SPACECRAFT Okay.

END OF TAPE

CAPCOM Roger, Bill, and you were cut out between the information you gave us on 3 EOG's and the biofeed back, if you could fill that in for us.

SPACECRAFT Okay, between the EOG's, as I said we had 3 regular EOG's, we had a couple with variations. Checked out the - and did a couple of people on the rotator, and that's the wrong word for it, oscillator would be a more correct word, did additional work with the gryo, and then did the Wendy's biofeedback, and I'll get you some times on the OPS data that came down. Stand by.

CAPCOM Roger, standing by Bill.

SPACECRAFT Okay, the first was an EOG which was from day 4, hour 04 and 10 minutes to hour 04 20 minutes. Second EOG was day 4, hour 4 . . . day 4, 05 hours, 07 minutes, again I don't have the ending time on that, and let me get you another time here.

CAPCOM Challenger, Houston, Bill, we missed . . .

SPACECRAFT Okay, Fish, tell them beginning at 03 days, 22 hours 16 minutes, that was a series of runs, they won't be familiar with the data, and the end time on that was about, that ran approximately 30 minutes, and then it continued on a second run which ended at 3 days, 23 hours and 1 minute.

CAPCOM Roger, Bill, we did copy that, but we missed the times for number 2 and 3, could you repeat.

SPACECRAFT You're coming in weak, Fish, say it again.

CAPCOM Roger, could you repeat the start times for numbers 2 and 3, you were cut out.

SPACECRAFT Wilco. Okay, number 2, the start time was 4 days, 04 hour, 30 minutes. I'm sorry I don't have an end time for that one. And for number 3, was 4 days, 5 hours, and 7 minutes, and that was an ending time, that's an ending time and they will have to go back forward from that, that's 04 05 07.

CAPCOM Roger, Bill, we copy again. It sounds like you continued to amass a tremendous amount of data and we're all looking forward to get a look at it when you get back.

SPACECRAFT Yes, it's pretty interesting, Fish, thank you much. We'll look forward to it.

CAPCOM Roger, and just a quick question for Richard, I wonder if you folks up there know why you got the damp reconfiguration message prior to Guam AOS.

SPACECRAFT Roger, Fish, I was going to tell you about that, standby. Yes, Fish, the reason for those was, we had to deselect some jets per the glow photography, procedure some vernier jets, and when you deselect them you get a damp reconfig message, and then we completed the procedure and reselected them, and we went thru it 2 or 3 times, and so that's what it was, we never got out of the EOIM attitude more than, well 2 or 3 degrees, I think.

CAPCOM Roger, we copy.

SPACECRAFT And we're, incidentally, we're hoping to do that again the next night pass, so don't be surprised, if you see that, that's what it'll be.

CAPCOM Roger, and we are not yet locked up on Ku so we can't receive your TV yet, but if it doesn't take much longer we'll call you as soon as we're ready to receive.

END OF TAPE

SPACECRAFT ... to do that again the next night pass so don't be surprised - if you see that, that's what it will be.

CAPCOM Roger, and we are not yet locked up on Ku, so we can't receive your TV yet, but if it doesn't take much longer, we'll call you as soon as we are ready to receive.

SPACECRAFT Okay, well we're ready right away.

CAPCOM Roger. Challenger, Houston.

SPACECRAFT Go Fish.

CAPCOM Roger, you folks can go ahead and torque the stars in the table and if you could we'd like the star numbers.

SPACECRAFT Standby. Roger Houston. The star numbers are 44 and 11.

CAPCOM Copy, 44 and 11 Richard.

SPACECRAFT Roger that, and do you have the other data?

CAPCOM Roger.

SPACECRAFT Okay.

PAO This is Shuttle Control. The next change of shift briefing is scheduled for 12:30 p.m. Central Daylight Time with Flight Director Harold Draughon in room 135 in the JSC news center. Next change of shift briefing 12:30 p.m. Central Daylight Time.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead.

CAPCOM Roger, Dale we're ready for the VTR dump.

SPACECRAFT Okay, here it comes. Got a picture Fish?

CAPCOM Roger, we do, but it's - there, we have a good picture now. We can see the end effector ...

SPACECRAFT Okay, you can see the very tip of the end effector and the earth and bottom of the Orbiter coming into view. This is the first scenes we saw as we got the arm underneath.

CAPCOM Dale, we've just lost the picture.

SPACECRAFT Now what happens after this is we put mostly various wrist joints through different rotations to see as much

of the bottom of the Orbiter as we can with this given shoulder and elbow pitch configurations.

CAPCOM Roger, Dale, we've lost the picture.

SPACECRAFT Should I stop the VTR until you get it back?

CAPCOM Roger, I'd recommend you rewind because the initial part of your picture we just saw the end effector heading under the Orbiter and then our picture became broken.

SPACECRAFT Okay, no problem.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead.

CAPCOM Roger, we'd like to have you initiate a cabin repress now, I've got a few steps for you right this minute and then a couple more presleep.

SPACECRAFT Fish, would you say again? We didn't quite understand, but go ahead.

CAPCOM Roger, Richard. I'll tell you. We have a cabin repress for you, but if you could give us the VTR now, we're ready to receive that and we'll give you the message after the dump.

SPACECRAFT VTR is starting now.

CAPCOM Okay, Roger Dale, we have a good picture.

SPACECRAFT Okay, and I won't have to do too much description. You will be able to see for yourselves a pretty good survey of the bottom of the vehicle. You'll be able to see the wing tips from the bottom, the landing gear doors, and some pretty views. Richard and Dan are standing by for the instructions on the press while we're watching this.

CAPCOM Roger, I'll go ahead and read those. Now what we'd like you to do is take the O2 reg inlet system 1 to closed and the 14.7 cabin reg inlet system 1 to open.

SPACECRAFT Okay, Fish. We got somebody down there in MO10W now. Say them again please.

CAPCOM Roger, Richard, and we're doing this because we'd like to get your cabin pressure up a little higher prior to presleep. We'd like to have that pressure start a little higher than you would have been starting it with. First, on MO10W O2 reg inlet system 1 closed and 14.7 ...

STS-8 AIR/GROUND TRANSCRIPT t225j 246:15:59 09/03/83 PAGE 3

SPACECRAFT ... say that again.

CAPCOM Roger, and 14.7 cabin reg inlet system 1 open.

SPACECRAFT Roger that's done.

CAPCOM Okay, and you will secure this prior to sleep by taking 14.7 cabin reg inlet system 1 to closed and the O2 reg inlet system 1 back to open.

SPACECRAFT Okay, understand we will secure this system by reversing what we've just did and that is ...

END OF TAPE

CAPCOM Dale, we would prefer you to rewind it because maybe 20 or 30 percent of what we got down here was scrambled so you could just maybe prepare for a complete playback, we'd appreciate it.

SPACECRAFT That easy to do too, you got it.

PAO This is Shuttle Control, 4 days 9 hours 55 minutes mission elapsed time. Challenger is over the south Atlantic, tail end of orbit 71. Will shortly enter orbit 72. Flight control shift handover will take place in the mission control center at noon central daylight time and Flight Director Harold Draughon will be available for change of shift briefing.

CAPCOM ... much more for you. We would like to get a resume spec 60 on CRT 2 and outside of that you guys have had another outstanding day. There just can't improve on the kind of work you're doing. Hope you get a good night's rest and we'll see you in the morning.

SPACECRAFT Roger, Houston. And how much time is there left after this pass?

CAPCOM Roger, Richard. We have about 11 minutes on TDRS.

SPACECRAFT Okay, I'd like to thank you guys for a super day also. This RMS testing and so forth has been tedious up here and you caught us, and I hope all of our mistakes and we really appreciate it. I'd also just realized that the end of this day that I had forgotten to say something on that air to ground that I had wanted to all day and that is this year the space program lost a very dear friend, a man by the name of Eddie Block, who has spent his life doing 3 things primarily, training astronauts and physical conditioning, training professional football players, and treating crippled children. And very few people in the country could meet a, there isn't a better or a bigger man than Eddie and we're all sorry to see him go. Fisher, thank you very much and if you have any need to call us for the remaining of this TDRS pass feel free, Fish.

CAPCOM Roger, Richard. And all you guys have a good night's sleep.

SPACECRAFT You bet.

END OF TAPE

SPACECRAFT Okay, understand we will secure the system by reversing what we just did and that is ...system 1 cabin reg inlet, is that correct?

CAPCOM Roger, Richard, that's correct and for Dale, we're - most of the TV picture they were getting is good and we have superb detail of the tiles and gear door. We can see really a great amount of the bottom of the Orbiter.

SPACECRAFT Houston, Challenger.

CAPCOM Roger, go ahead, Richard. Challenger, Houston. Challenger, Houston, reacquiring TDRS. Richard, we did copy, I believe I copied your last transmission. Challenger, Houston.

SPACECRAFT Houston, Challenger. Go ahead, (garble).

CAPCOM Roger, Richard. Your last transmission was correct. The activities you do immediately prior to sleep are to undo the 2 steps that we just called up to you. Challenger, Houston. Challenger, Houston.

SPACECRAFT Hello.

CAPCOM Hello, Dale. We've had some TDRS problems. If Richard was trying to contact us, we're ready to copy.

SPACECRAFT No, we weren't calling.

CAPCOM Okay, Roger. We just wanted to verify that you understood the presleep activity was just to return the O2 reg inlet and 14.7 cabin reg inlet to their previous positions.

SPACECRAFT Affirmative, Fish. We copy that and understand. Thank you.

CAPCOM Roger, Dale. And we were able to see most of that film on the Juliet survey and indeed we saw some spectacular views in tremendous detail, thank you very much.

SPACECRAFT You got it, we'll bring the rest of it home with us.

CAPCOM Rog. And if wouldn't mind keeping it handy since some of it was broken, we would maybe like to ask you to send it down to us tomorrow.

SPACECRAFT Okay, I stopped right in the middle there when I saw the Ku signal trying to go to zero so, we can pull it out and stick it back in at this point when you ask us tomorrow.

CAPCOM Roger, Richard and all you guys have a good night's sleep.

SPACECRAFT You bet.

SPACECRAFT This is Shuttle Control, the crew is beginning the sleep period, still about 9-1/2 minutes left on this TDRS pass and we'll stand by for any further air-to-ground, we don't expect any however. The shift handover is at noon, Central Daylight Time and Flight Director Harold Draughon will be available in room 135 for the change of shift briefing at 12:30 p.m. Central Daylight Time. 12:30 Central Daylight Time for the change of shift briefing.

CAPCOM Challenger, Houston,

SPACECRAFT Roger, go ahead.

CAPCOM Roger, you may get a cabin CO2 message, your CO2 is 7.4, so just don't be surprised.

SPACECRAFT Okay, by golly, there it is. Houston, CDR.

CAPCOM Houston, go ahead, Richard.

SPACECRAFT Roger, I'm sure you all are interested in seeing our configuration before we go to bed, so we're going to go ahead and change the LiOH cartridges now and configure the ECLS system.

CAPCOM Roger, Richard, we concur. And Challenger, Houston, Challenger, Houston, Challenger, Houston, and the blind message 47 will have your CAP summary for tomorrow.

PAO This is Shuttle Control. TDRS loss of signal on orbit 72. Challenger in a couple of minutes will enter the night side of that orbit and the Challenger crew preparing for rest. In the Mission Control Center, handover is underway, and the change of shift briefing will occur at 12:30 p.m., Central Daylight Time. At 4 days, 10 hours, 10 minutes mission elapsed time, this is Shuttle Control Houston. This is Mission Control Houston, at 4 days, 10 hours, 29 minutes mission elapsed time handover has occurred in the Mission Control Center, Flight Director Jay Greene and the planning team of flight controllers are now on duty, and off-going Flight Controller Harold Draughon will be available as scheduled at 12:30 central time for his change of shift press conference in building 2 room 135 at Johnson Space Center. The sleep period has begun onboard Challenger and is, we are now about 50 minutes into that sleep period. This is Mission Control Houston. This is Mission Control Houston, at mission elapsed time 4 day, 11 hours and 55 minutes, everything continues to be quiet onboard the Challenger. There is 5 hours, 45 minutes remaining in their

STS-8 AIR/GROUND TRANSCRIPT t227j 246:16:30 09/03/83 PAGE 2

sleep period. The Mission Control team, planning team and the control center is orchestrating the crew activity plan for the next flight day activities and some video tape is being replayed in the control room to show the flight controllers some of the events which occurred while they were off-shift, including the press conference with the national news media representatives which occurred early this morning. Again systems onboard Challenger continue to function nominally and downlink telemetry indicates a healthy and sound vehicle. This is Mission Control Houston. This is Mission Control Houston, Challenger is on orbit 74 over the heart of South America presently, and there are just under 5 hours remaining in this sleep period.

END OF TAPE

PAO This is Mission Control Houston, Challenger is on orbit 74 over the heart of South America presently, and there are just under 5 hours remaining in the sleep period and the crew is passing an apparently uninterrupted evening, no caution and warning alarms have been triggered and we of course continue to take data as the Challenger flies over ground stations. Data reveals the orbital parameters to be a 120 nautical mile apogee, 118.2 perigee, an orbital period of an hour, 29 minutes, 4 seconds and - call up some life support information here and I'll read off what the temperature and humidity levels are onboard. Life support temperature onboard the vehicle is 80 degrees and steady, humidity 27 percent - 80 degrees may in fact be a little warmer than it is inside the cabin since the sensor that records that data is located down fairly close to some avionics gear and it tends to get a little toastier than it is in reality in there. Mission elapsed time is 4 days, 12 hours, 59 minutes, this is Mission Control Houston. This is Mission Control Houston, at 4 days, 13 hours, 48 minutes mission elapsed time. We're in the middle of a rather long loss of signal period presently, on orbit number 74. We don't acquire for another 40 minutes still until the Challenger encounters Dakar. Presently the vehicle is just over the northern tip of Australia. Four hours remaining in the sleep period and the crew has continued to spend an apparently uninterrupted night's sleep and the planning team here in the Mission Control Center continues progressing through establishing a crew activity plan for tomorrow's flight activities. This is Mission Control Houston. This is Mission Control Houston. Three hours remaining in the astronauts' sleep period. We've just had acquisition of signal with Challenger over Dakar and the Flight Control team is looking at the downlink telemetry, and verifying the nominal systems onboard the vehicle and that there have been no caution and warning alarms to interrupt the crew's sleep. This has been a fairly long loss of signal period of just slightly over an hour since the last time we had a look at the vehicle and it is of course always reassuring to note that nothing has happened over the LOS periods. Mission elapsed time is presently 4 days, 14 hours, 40 minutes. This is Mission Control Houston. This is Mission Control Houston. Challenger on orbit 76 over the South Pacific presently. The planning team is presently reviewing the execute package and checking it for accuracy and spelling and making sure that it's suitable for uplink to the vehicle here just before the wakeup period. There are 2 hours remaining in the sleep period for the Challenger astronauts and the execute package will include activities budgeting the astronauts' time on their final full day in space, and that execute package will, of course, be made available in the newsroom at Johnson Space Center and it will be sent to our sister centers for media access. The astronauts continue an uninterrupted sleep period and will begin the next day's activities in approximately 2 hours.

END OF TAPE

PAO be available in the newsroom at Johnson Space Center and will be sent to our sister centers for media access. The astronauts continue an uninterrupted sleep period and begin the next day's activities in approximately 2 hours. At mission elapsed time 4 days, 15 hours, 30 minutes this is Mission Control Houston.

PAO This is Mission Control Houston. Mission elapsed time is 4 days, 16 hours, 17 minutes. About an hour and a half remaining in the crew's sleep period. Everything continues to be quiet onboard the vehicle and downlink data confirms that onboard systems are performing nominally. Our intention is to cancel the change-of-shift briefing scheduled for 9 o'clock with Flight Director Jay Greene due to the uneventful night and the fact that there are no changes in the status of the flight since the past the change-of-shift briefing. If any news media representatives take exception to this plan and do wish to have a press conference, please notify the Johnson Space Center newsroom at your earliest opportunity. The news center can be contacted at 483-5111. Again our intention is to cancel the scheduled 9 o'clock change-of-shift news conference. Mission elapsed time 4 days, 16 hours, 19 minutes. This is Mission Control Houston.

PAO This is Mission Control Houston at mission elapsed time 4 days, 17 hours, 8 minutes. There are 30 minutes remaining in the crew's sleep period but we just passed a brief AOS over Auroral and the downlink data indicated that all four CRT's, all four cathode ray tube displays, onboard Challenger are on and operating, which would suggest that the crew is awake although there are 30 minutes remaining in the sleep period. We acquire signal again in 23 minutes through the Merritt Island land station and it's doubtful that the Flight Control team will initiate a contact at that point, presumably that won't occur until we acquire through Dakar in about 38 minutes from now. At that point the sleep period will have expired, although it's fairly conceivable that the crew will initiate contact before then. There is no suggestion that any caution and warning alarms have occurred to interrupt the crew's sleep and Challenger is presently on orbit 77 just having slipped across Australia and now in the heart of the South Pacific. Mission elapsed time 4 days, 17 hours, 10 minutes. This is Mission Control Houston.

PAO As a reminder and advisory, our intention again is to cancel the scheduled 9 o'clock change-of-shift briefing with Flight Director Jay Greene. Since the night has been uneventful and there have been no changes in status of the vehicle or flight control since the past change-of-shift briefing earlier today, we do intend to cancel the change-of-shift briefing and if any news media representatives take exception, they should advise the Johnson Space Center press center of their desires, and the press center may be contacted at Houston telephone number 483-5111. This is Mission Control Houston. END OF TAPE

PAO press center of their desires and the press center may be contacted at Houston telephone number 483-5111. This is Mission Control Houston.

PAO This is Mission Control Houston, mission elapsed time, 4 days, 17 hours, 44 minutes. Now we have indicators showing that the crew's awake and active. The cathode ray tube displays onboard Challenger have been activated, the heat comm has advised that the data shows a fuel cell purge being executed onboard. Sleep period has now expired, likely we will not -- Challenger's presently on orbit 77, right across the heart of the north Atlantic Ocean, but we catch just a brief pass through Dakar and Madrid. Likely we will not have communications with the crew at those stations, however, since those are both extremely brief passes and elevation is very low through Dakar. Elevation is -- the Shuttle passes only 1.5 degrees maximum elevation over the horizon, and through Madrid, maximum elevation is 1.6 degrees over the horizon. Accordingly, those are very brief passes and likely we will not initiate dialogue with the crew until we reach Indian Ocean station in about 20 minutes from now. And the data downlinked again reaffirms that no caution and warning alarms had been triggered during the night and the crew's sleep period was undisturbed. So with the crew up and around, and the new flight day on the horizon we will stand by for air-to-ground in about 20 minutes, at mission elapsed time, 4 days, 17 hours, 46 minutes. Again the repeating of our intention to cancel the change-of-shift briefing with Flight Director Jay Greene, that briefing scheduled for 9:00. Due to the uneventful night and no new items to discuss, we do intend to cancel that briefing and urge news media members to advise the Johnson Space Center Newsroom if they take exception to that plan and to please do so soon. This is Mission Control Houston.

END OF TAPE

SPACECRAFT (garble), Houston.

("Wake up" Music)

CAPCOM Good morning, Challenger.

CAPCOM Good morning, Challenger.

SPACECRAFT Good morning, Houston. Thank you for that thoroughly enlightening cultural experience.

CAPCOM Well it was a tossup between that and the Wisconsin Fight Song, and that one won.

SPACECRAFT How much water you want dumped this morning?

CAPCOM Okay Dan, we'd like you to dump tank bravo to 20%. Take about 35 minutes. And I've got 2 other notes for you when you're ready to copy.

SPACECRAFT Okay, go ahead.

CAPCOM First of all, perform the manual cabin atmosphere management as of - as you did yesterday. Repress the cabin with nitrogen per the orbit ops checklist page 5-10 and do not perform the repress during WCS use. And on panel R1, the cryo management scheme team this morning. Cryo O2 tank 3 heaters alpha to off. Cryo O2 tank 2 heaters bravo to off. Cryo O2 tank 1 heaters bravo to off. Cryo H2 tank 3 heaters alpha and bravo to off.

SPACECRAFT Okay, Houston, tank 2 pressure O2, tank 3 heaters are all off, O2 tank 2 bravo off, O2 tank 1 bravo off and H2 tank 3, all the heaters are off.

CAPCOM Roger, and we'll see you next at Indian Ocean at 18 plus 05.

SPACECRAFT Okay, thank you.

PAO This is Mission Control, Houston at 4 days, 17 hours, 52 minutes. Commentator Cleary guessed wrong about the intentions to wake up the crew that - they did take advantage of the UHF pass over Dakar to uplink that wake-up music and the wake-up call this morning was, well I'll just spell it, Tala Sawari, T-A-L-A, second word S-A-W-A-R-I, it's some traditional Indian folk music as performed by (garble) sitar player, Randy Shankar. The selection deemed appropriate by the capsule communicators inasmuch as the primary mission of STS-8 is the release of the Indian Satellite. That wake-up call acknowledged by Challenger pilot, Dan Brandenstein. And we will acquire signal again in 12 minutes through Indian Ocean. Mission elapsed time is 4 days, 17 hours, 53 minutes. And in the absence

STS-8 AIR/GROUND TRANSCRIPT t231j 247:00:43 09/04/83 PAGE 2

of any request to the contrary, we now officially declare the
9:00 press conference cancelled. This is Mission Control,
Houston.

END OF TAPE

CAPCOM Challenger, Houston, with you at Indian Ocean for 6 minutes.

SPACECRAFT Roger Houston, loud and clear.

CAPCOM And we've got you loud and clear and we're standing by.

SPACECRAFT Okay. And Houston, CDR. If you get an opportunity, would you fire us up one more copy of message 48, the tacan tab numbers?

CAPCOM Wilco.

SPACECRAFT Thanks Brian. You ought to see the sunrise, Brian. Beautiful.

CAPCOM I'll bet it is.

SPACECRAFT This EOIM attitude is like riding in a big tour bus.

CAPCOM Roger that.

SPACECRAFT The upper windows are looking straight ahead.

CAPCOM That must be spectacular.

SPACECRAFT In the front end sitting up in the CDR and the PLT seat, the front windows look like you could just slide right out the front, looking straight down.

CAPCOM Challenger, Houston, 40 seconds to LOS. We'll see you next at Yarragadee at 18 + 21.

SPACECRAFT Okay, see you there.

PAO This is Mission Control Houston at 4 days, 18 hours, 13 minutes mission elapsed time. Just lost signal at orbit 77 through Indian Ocean station. The EOIM attitude that Dick Truly referred to is the elevation of oxygen interaction with materials. Payload onboard which carries instrumentation to obtain quantity rates of oxygen interaction with materials used on the Orbiter and future advanced payloads, and the Orbiter is flying at this 120 nautical mile-attitude in order to bang into more oxygen molecules and to further enhance the impact of those molecules. The vehicle's placed in an attitude with it's nose down and the payload bay facing directly into the velocity vector. Accordingly, the crew looking out the forward flight deck windows gets an extraordinary panoramic view of the Earth as it rolls past underneath and that prompted Dick Truly's

remarks. We will acquire signal again in 6 minutes through Yarragadee. At mission elapsed time, 4 days, 18 hours, 15 minutes, this is Mission Control, Houston.

PAO This is Mission Control Houston, we'll have voice in just a few seconds through Yarragadee.

CAPCOM Challenger, Houston, with you at Yarragadee for 6 1/2 minutes.

SPACECRAFT Roger, Brian, loud and clear.

CAPCOM Read you the same Richard and we're standing by. Challenger, Houston, 30 seconds to LOS, we'll see you at Orroral at 18 + 30.

SPACECRAFT Roger, Houston, see you then.

CAPCOM Challenger, Houston, with you at Orroral for 2 minutes.

SPACECRAFT Roger, Houston, read you loud and clear.

CAPCOM Read you the same and we're standing by. Challenger, Houston have a word for you on your IMU align.

SPACECRAFT Roger, go ahead.

CAPCOM Roger, Richard, we see two good stars in the table, 44 and 11. If you can torque those in the next 30 minutes, you can do that and cancel your roll align.

SPACECRAFT Okay, we'll torque the stars in the table right after we cross the continent.

CAPCOM Roger. And Challenger, Houston, we'd like you to go to -ZLV as scheduled.

SPACECRAFT Roger, Houston.

CAPCOM Challenger, Houston, 20 seconds to LOS, we'll either see you TDRS at 18:44, or if that doesn't work, Mila at 19 + 05.

SPACECRAFT Roger, Houston, see you later.

END OF TAPE

CAPCOM Challenger, Houston, 20 seconds to LOS, we'll either see you TDRS at 18:44 or if that doesn't work, Mila at 19 plus 05.

SPACECRAFT Roger Houston, see you later.

PAO Mission Control, Houston, 4 days, 18 hours, 33 minute mission elapsed time. Astronaut, Dick Truly preparing to do the alignment of the inertial measurement units, part of the navigation system onboard the shuttle. He was informed by ground controllers that the star trackers have acquired 2 usable stars for the alignment of those measurement units. The crew is just now getting into their day, not yet to the point in the timeline where they have the specific activities laid out for them but they're in the period of time set aside for them to prepare their breakfast and get ready to face the day. Challenger on orbit no. 77, the last quarter of that orbit just out of range of the Ororal station passing out over the coast of Australia at this time. We expect to hear from the crew in about 10 minutes if we acquire them through the Tracking Data Satellite, otherwise it'll be about 30 minutes when we get them on the continental U.S.. This is Mission Control, Houston.

PAO Mission Control, Houston, we have acquisition through TDRS.

CAPCOM Challenger, Houston with you TDRS for another 49 minutes. Standing by.

SPACECRAFT Roger Houston, read you loud and clear.

CAPCOM Roger, read you the same and we see the dump complete, the torqued platforms and the fuel cell purge.

SPACECRAFT Roger, and if you need the numbers on the IMU's, I've got them.

CAPCOM Challenger, Houston, we got all the numbers, thanks.

CAPCOM Challenger, Houston. Richard, we got all the IMU numbers, we do not need them, thanks.

SPACECRAFT Roger Houston, copy. Houston, 2 questions, 1 is since we're all up and awake, can we reopen the vacuum vent after we repress the cabin and the second is with the deletion of the IMU roll star track maneuver, do you want to leave -- deactivate the EOIM on time or delay it until just prior to the ZLV maneuver?

STS-8 AIR/GROUND TRANSCRIPT t233j 247:01:04 09/04/83 PAGE 2

CAPCOM Challenger, Houston, you are go on the vacuum vent and we'll get back to you on the other, on the EOIM deactivation.

SPACECRAFT Okay Houston, thanks.

CAPCOM Challenger, Houston. We'd like you to go to the ZLV attitude on time and deactivate the EOIM just before doing that.

SPACECRAFT Roger, ZLV on time and deactivate EOIM just prior to that. We'll do it.

CAPCOM Roger.

SPACECRAFT Houston, CDR. I've done the N2 repress and also opened the WCS vacuum vent valve so if you'd keep an eye on it, we'd sure appreciate it.

CAPCOM Challenger, Houston. We copy.

SPACECRAFT And Houston, CDR. Another word - except for the gate valve leak, the system is still working as designed.

CAPCOM Houston, copy.

PAO Mission Control, Houston, 4 days, 19 hours, 8 minutes mission elapsed time. Challenger now passing over the southern tip of Florida at the present time on orbit no. 78. We still have contact with the Challenger through the Tracking Data Relay Satellite. Several minutes ago during conversation with the crew, Commander Dick Truly reported that they had completed the repressurization of the cabin with the nitrogen and asked the flight controllers here in mission control to keep an eye on the gate valve in the Waste Containment System that has been experiencing a slow leak for the last few days of the mission. Truly also reported that other than that leak, the WCS has been working as designed.

END OF TAPE

PAO ...usable star in the waste containment system that has been experiencing a slow leak for the last few days of the mission. Truly also reported that other than that leak the WCS has been working as designed. This is Mission Control. Today is a get ready to come home day on the Orbiter. The crew will be doing the flight control system checkout as they usually do before -- on the day before entry, firing up one of the auxiliary power units and moving the aerodynamics surfaces, make sure that all of that very important equipment works before reentry early Monday morning. They'll also be engaged in a test of the tactical air navigation system to determine whether or not orbiting spacecraft can use that earthy aircraft navigation system. A good portion of the remainder of the day is taken up with stowing away all of the equipment in its proper place in the lockers used during the flight so that nothing is floating around loose when they get ready to come home Monday morning. This is Mission Control, Houston.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead Houston.

CAPCOM Roger, we're about to lose the TDRS due to blockage, we will probably downmode to the S-band, but will be intermittent. We'll for sure get you at Dakar at 4 -- at 19 + 20.

SPACECRAFT Roger, (garble).

CAPCOM Challenger, Houston. We have you back through TDRS for about 12 minutes.

SPACECRAFT Roger, Houston, loud and clear.

PAO This is Mission Control. That is CAPCOM Franklin Chang speaking with the crew.

CAPCOM Challenger, Houston, we are about a minute to LOS, we'll see you next over IOS at 19:39. Challenger, Houston, we have you through the Indian Ocean for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear and we are just coming into sunlight and we deactivated the EOIM and started the maneuver to (garble).

CAPCOM Roger, Houston copies. We see the deactivation and the maneuver.

SPACECRAFT Okay, and everybody's eating breakfast, Brian, and we're -- I'm up here setting up for our around the world TV, recording. For INCO'S benefit, what I'm planning on doing is

using cameras bravo and Charlie and let them run, so if he would avoid panning and tilting those two cameras while -- for, you know, during the time that we're recording VTR, I'd appreciate it.

CAPCOM Roger, we copy and wilco.

SPACECRAFT Other than that, I'm going to leave the control, TV power control switch, in command, so you know, you can do what you like beyond that.

CAPCOM Copy that. Challenger, Houston, I've got a switch action on panel A7 for you.

SPACECRAFT Roger, go ahead.

CAPCOM Roger, on that panel, the MAD strain gage, which should go to PCM enable.

SPACECRAFT Okay, MAD strain gage is PCM enable.

CAPCOM Roger, and we're going to go LOS here in about 30 seconds, we'll see you next over Yarragadee at 19:55.

SPACECRAFT Roger, is this Franklin?

CAPCOM That's right.

SPACECRAFT Thank you Franklin, I appreciate it and see you there.

CAPCOM Okay. Challenger, Houston, we have you for 7 minutes over Yarragadee.

SPACECRAFT Roger, Franklin, we read you loud and clear.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t235j 247:02:28 9/4/83 PAGE 1

CAPCOM Challenger, Houston, we have you for 7 minutes over Yarragadee.

SPACECRAFT Roger, Franklin, we read you loud and clear.

PAO Mission Control, Houston, 4 days, 19 hours, 56 minutes mission elapsed time. Challenger approaching the western coast of Australia over the Yarragadee station, orbit no. 78. Commander Truly reported in the previous pass that they were moving to the minus 2 local vertical position attitude and that the crew is having breakfast. He also noted that they were setting up the television for the around the world tour. They'll be doing some video tape recording of television from the spacecraft looking down at the earth. This is Mission Control.

CAPCOM Challenger, Houston, we're one minute to LOS and we'll see you over Orroral in about 3 minutes.

SPACECRAFT Roger, Franklin, see you then.

PAO Mission Control, Houston, 4 days, 20 hours, 2 minutes mission elapsed time. Challenger in the gap between the range of the stations of Yarragadee and Orroral. We'll be catching the, just the tip of the range of the station at Orroral in about a minute and 45 seconds. This is Mission Control.

CAPCOM Challenger, Houston, we have you through Orroral for a very short minute and we'll see you next over TDRS at 20 plus 20.

CAPCOM Challenger, Houston, we're about 20 seconds to LOS, we'll see you over TDRS at 20 plus 20.

SPACECRAFT Roge, Franklin.

PAO Mission Control, Houston. Very little communication with the crew during its pass over the continent of Australia. Challenger now out of range of those tracking stations and if we acquire through the Tracking Data Relay Satellite over the central Pacific that would occur in about 13 minutes from now. Four days, 20 hours, 6 minutes mission elapsed time, this is Mission Control.

PAO This is Mission Control, 4 days, 20 hours, 20 minutes. We have acquisition through the Tracking Data Relay Satellite.

CAPCOM Challenger, Houston, AOS through TDRS for 48 minutes and we're standing by.

STS-8 AIR/GROUND TRANSCRIPT t235j 247:02:28 9/4/83 PAGE 2

SPACECRAFT Roger Houston, read you loud and clear and we're recording on the around-the-world VTR tour during the daylight, our daylight, we're going to be on camera bravo and then as it gets dark, going to camera charlie.

END OF TAPE

CAPCOM Challenger, Houston, AOS through TDRS for 48 minutes and we're standing by.

SPACECRAFT Roger, Houston, read you loud and clear and we're recording on the round-the-world VTR tour, during the daylight, our daylight, we're going to be on camera bravo, and then as it gets dark, going to camera Charlie.

CAPCOM Houston copies. Challenger, Houston. Challenger, Houston with a note on the FCS checkout.

SPACECRAFT Roger, Houston, go ahead.

CAPCOM Roger, we recommend on the APU -- on the FCS checkout to use APU number 3 and the start time for that test will be at 21:35. That will be the start time of the FCS checkout.

PAO Mission Control Houston, 4 days, 20 hours, 34 minutes, mission elapsed time. Challenger passing into the darkness now, crossing the terminator on orbit number 79, while Commander Dick Truly continues to run the cameras and the tape recorder - video tape recorder - on his round-the-world video tour. About an hour from now Commander Truly and Pilot Dan Brandenstein will begin their checkout of the flight control system, those Orbiter systems which are used on entry day Monday. They'll fire up auxiliary power unit number 3 which provides power to the hydraulic system for the movement of the aerodynamic surfaces. That will occur at about mission elapsed time 4 days, 21 hours, 30 minutes. We're still receiving data and voice through the tracking relay data satellite and the Challenger is about to make a pass over the continental United States, coming up on the west coast of Mexico at the present time. This is Mission Control Houston.

CAPCOM Challenger, Houston, we want to send you a CAP update.

SPACECRAFT Roger, Houston, go ahead.

CAPCOM Roger, Dan, we'd like you to start now the APU steam vent heater activation.

SPACECRAFT Roger, it worked. Okay, Houston, that's complete. Power controller power heater is alpha on and so are controllers. And we just overhead Houston, it looks like you got some pretty good weather down there again.

CAPCOM Roger, Houston. We're checking the data. Challenger, Houston, we've got some good TV coming down.

STS-8 AIR/GROUND TRANSCRIPT t236j 247:02:55 09/04/83 PAGE 2

SPACECRAFT Roger, you're looking at the Cape from 120 miles up.

CAPCOM Roger that.

SPACECRAFT And Houston, Challenger, it really looks pretty on the states tonight. The east coast looks clear all the way up to the Norfolk area.

CAPCOM Roger that, Dan.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead Challenger.

SPACECRAFT Roger, started a flight controller checkout and the APU start at 21:35, is that the start of the TDRS pass when we come up around there next time?

CAPCOM Standby Challenger.

SPACECRAFT Okay, when we get there we'll have the -- be all ready to go and as soon as you get that -- ready to start them let us know and we'll get them started then.

CAPCOM Roger that. Challenger, Houston, we got a resolution on the FCS checkout question.

SPACECRAFT Roger, go ahead.

CAPCOM Roger, we'd like you to start part 2 first at 21:35 and complete that and then do the part one at 22:05.

SPACECRAFT Okay, part 2 first, sounds good. You all still getting downlinked TV?

CAPCOM Negative, Dick, no downlink TV.

SPACECRAFT Okay, well we just recorded...

END OF TAPE

SPACECRAFT Okay, part 2 first, sounds good. You all still getting downlinked TV?

CAPCOM Negative, Dick, no downlink TV.

SPACECRAFT Okay, well we just recorded Orion rising.

PAO Mission Control Houston, 4 days, 20 hours, 55 minutes mission elapsed time. We continue to have voice and data communication with the Challenger through the tracking data relay satellite. Spacecraft is approaching the west coast of Africa now and is over the Dakar station on orbit number 79. During that recent pass over the continental U.S., we had some live downlink television from the Challenger. Crew operating the cameras as they passed over the U.S.. We saw what appeared to be some thunderstorms over the Gulf area and near the Houston area and then some of the lights of the Cocoa Beach and Kennedy Space Center area as they passed over Florida. In about half an hour, the Pilot and Commander will be involved in the checkout of the flight control system. They'll be using auxiliary power unit number 3 for that checkout.

CAPCOM Go ahead.

PAO Mission Control Houston, 4 days, 21 hours, 12 minutes mission elapsed time. Challenger passing out of range of the tracking data relay satellite. We'll pick up again in about 16 minutes over Yarragadee. This is Mission Control.

PAO Mission Control Houston, 4 days, 21 hours, 29 minutes, standing by for acquisition of the Challenger through the Yarragadee station in western Australia.

CAPCOM Challenger, Houston, with you through Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston, we have you loud and clear.

CAPCOM You too, Dan.

SPACECRAFT And we just transitioned to 801 and Guy's getting ready to start his tacan test and in about 6 minutes we'll start the - part 2 of the flight control checkout.

CAPCOM Roger, copy.

PAO This is Mission Control. Challenger crossing the western coastline of Australia at the present time. A couple of minutes ago we had Pilot Dan Brandenstein reporting that Mission Specialist Guy Gardner was, or rather Dale Gardner, was evaluating proceeding with his tacan system checkout, evaluating

STS-8 AIR/GROUND TRANSCRIPT t237j 247:03:23 9/04/83 PAGE 2

the use of the tactical air navigation system for vehicles in orbit and that they were about to begin their flight control system checkout. This is Mission Control.

CAPCOM Challenger, Houston, we're 1 minute to LOS, we'll see you at Hawaii at 21:57.

SPACECRAFT Wilco and we're on page 7-17.

CAPCOM Roger, thank you, Dick.

PAO This is Mission Control, 4 days, 21 hours, 36 minutes mission elapsed time. Challenger's passed out of range of the Yarragadee station and it will be about another 18 1/2 minutes before we reacquire through the tracking data relay satellite on orbit number 80. Should that not be available or operating at the time we pass within its range, it'll be another 2 minutes after that or a minute and a half after that, before we acquire communication through the Hawaii station. This is Mission Control.

END OF TAPE

PAO ...into the Hawaii tracking...

SPACECRAFT Challenger copy. Houston, Challenger, how do you read?

CAPCOM You're loud and clear Dick.

SPACECRAFT Roger, the burn 1 was nominal, we'll wait for your go for APU shutdown.

CAPCOM Challenger, Houston. Dick we didn't see any delta Ps build up on channel 2 on the positive test, we'd like for you to redo that.

SPACECRAFT Okay. Here it comes.

CAPCOM Roger.

SPACECRAFT Okay, I'm waiting for your go to do the stop on channel 2.

CAPCOM You're go to stop, it looks good.

SPACECRAFT Okay Houston, that's complete, standby for your go to -- for APU shutdown.

CAPCOM And Challenger, you're go for APU shutdown.

SPACECRAFT Wilco. Okay Houston, APU shutdown is complete and we're back on 7-25 if it's okay with you and we're heading back for OPS 2.

CAPCOM Roger, stand by Dick. And Challenger, Houston. Richard, we'd like to say in OPS 8 till you're finished getting the tacan data and we can go back to OPS 2 there at the, when you maneuver to the -' ar tracker attitude at 22 + 50.

SPACECRAFT Sure, I forgot about that, sorry. We'll do that, we'll remain here and when Guy's through with the tacan data, we'll head back to OPS 2 and ZLV.

CAPCOM Roger.

PAO This is Mission Control, 4 days, 22 hours, 17 minutes mission elapsed time. The crew has completed their checkout of the flight control system. They just recently operated the auxiliary power unit number 3 that provides power to the hydraulic system that moves the aerodynamic surfaces. All of that system checked out properly and they have shut down the APU. This is Mission Control.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead, Richard.

SPACECRAFT Yeah, I'd have bet a nickel that after Dan shut down the APUs that I had gone to verniers and now we're back in the, we're in, I noticed we're in the big jets. Did GNC see us go to verniers?

CAPCOM Standby. Roger, we concur you went to verniers there and no problems.

SPACECRAFT Roger, well verniers is where we should be, isn't it?

CAPCOM Standby. That's affirmative, you should be back in verniers now.

SPACECRAFT Okay, I'm going to verniers, I'm not sure how we got back on the normal jets.

CAPCOM Okay, my misunderstanding, Dick. Your concern was that you didn't know how you got on the norms?

SPACECRAFT That's correct. I, per the checklist I went to the verniers jets and then after, oh 3 or 4 minutes, a big jet fired and I looked down and we were in normals and I'm not, maybe somebody bumped a switch, I'm not sure, but I just wondered.

CAPCOM Roger, we'll look and see if we can figure it out from the data.

SPACECRAFT Roger. And Houston, CDR, we have powered down the switches on 7-25 except for the ASAs, keep their own drive messages on, and we'll catch the ASAs when we transition OPS 2.

CAPCOM Roger, copy Dick, and we're about to go LOS here, I'll see you at Dakar at 22 + 29.

SPACECRAFT Roger, see you there.

CAPCOM Rog, and for Dale, be advised I've got a CAP update, I'll be adding a VTR playback here of the Orbiter inspection that you all did yesterday. We'd like to dump that data and I'll get that to you at Dakar.

SPACECRAFT Okay.

PAO Mission Control Houston. We have loss of signal through the Bermuda station. We'll pick up again in 5 minutes over Dakar, 4 days, 22 hours, 24 minutes mission elapsed time this is Mission Control Houston.

PAO . . . mission elapsed time, this is Mission Control, Houston.

CAPCOM Challenger, Houston with you through Dakar and Ascension for 9 minutes.

SPACECRAFT Roger, Houston, and in looking at the timeline, if we're to stay in OPS 8 to let Guy finish his TACAN test, we're going to be unable to maneuver to the star tracker attitude so maybe we -- well we could either zip back to OPS 2 and maneuver there and lose a little bit of the TACAN data or just reschedule it later, and it's your call. Either way is fine with us.

CAPCOM Okay, stand by while we check it.

SPACECRAFT And no problem fitting it in later on today if you'd like to do that.

CAPCOM Okay, stand by, Dick.

CAPCOM And Dick, the way we had it planned was that the TACAN test would maneuver -- would terminate at 22:50 and that's when you start your maneuver to the minus 2 star tracker attitude.

SPACECRAFT Roger Houston, I guess I'm confused and we've got -- our TACAN message that we got, shows TACAN activity going all the way to 23:27 and it was my understanding that we couldn't do that except in OPS 8.

CAPCOM Stand by, Dick. We see your confusion now, we're trying to straighten out it down here.

SPACECRAFT Okay.

CAPCOM And Challenger, Houston, what we need to do on the -- your TACAN message is to delete those last 4 sites there starting at 23:07 and will terminate at 22:45.

SPACECRAFT Okay, I understand, we'll do that and we'll -- at 22:50 we'll go ahead and do the maneuver and do the star tracker test.

CAPCOM Roger that. And I've got a, whenever you've got the time, we're going to try to get a VTR dump after lunch this afternoon and we show a good time to set up the VTR setup for the playback would be right before lunch and I've got some specific times for you whenever you want them.

SPACECRAFT Stand by.

CAPCOM And Challenger, Houston, we got a new state vector onboard.

SPACECRAFT Thank you very much and ready to copy the times you'd like the VTR done.

CAPCOM Okay, at, first of all, at just before lunch at 5 days, 1 plus 20, we'd like you to perform the VTR playback setup, that's the photo checklist, page 1-31. And then at Hawaii AOS, at 5 days, 2 plus 23, we'd like to perform the VTR playback and then at 3 plus 00, perform the VTR deactivation.

CAPCOM And let me make a correction to the Hawaii AOS time for the playback. It's 2 hours and 37 minutes.

SPACECRAFT Okay, be ready Hawaii at 2 plus 37 for the VTR playback and I'm assuming you want to, or do you want to start that playback from the beginning of the underside survey?

CAPCOM Stand by. That's affirmative, Dick.

SPACECRAFT Okay, we'll be ready.

CAPCOM Challenger, Houston, we're about 30 seconds to LOS, we'll see you at Botswana at 22 plus 46.

SPACECRAFT Roger Houston, see you there.

PAO Mission Control, Houston, 4 days, 22 hours, 38 minutes mission elapsed time. Challenger had a rang of the Ascension station, orbit no. 80, and we'll hear from the crew again over the Botswana station in about 7 minutes. This is Mission Control.

CAPCOM Challenger, Houston. I'm with you on TDRS, now.

SPACECRAFT Roger Houston, read you loud and clear. And Houston, CDR. I've got a question on the star tracker test.

CAPCOM Go ahead, Dick.

SPACECRAFT It has to do with the COAS. I'm assuming by make COAS observations that you don't mean doing any maneuvering or anything but just look through the COAS and see if we can record the location of the star in the COAS, and mark that down so we can tell you about it. Is that correct?

CAPCOM That's correct, Dick.

SPACECRAFT Okay, no problem.

STS-8 AIR/GROUND TRANSCRIPT t239j 247:05:00 09/04/83 PAGE 3

CAPCOM Okay, and I got a little note.

SPACECRAFT Okay, here it comes Houston.

CAPCOM Roger.

SPACECRAFT Okay, I'm waiting for your go to do the stop on
channel 2.

CAPCOM You're go to stop, it looks good.

END OF TAPE

SPACECRAFT I've got a question on the star tracker test.

CAPCOM Go ahead Dick.

SPACECRAFT Okay, it has to do with the COAS. I'm assuming by make COAS observations that you don't mean doing any maneuvering or anything but just look through the COAS and see if we can record the location of the star in the COAS, and mark that down so we can tell you about it, is that correct?

CAPCOM That's correct, Dick.

SPACECRAFT Okay, no problem.

CAPCOM Okay, and I've got a little note for you on that, if the, when you try to break track on a real bright object and it doesn't, you don't lose the asterisks, as happened the other time you did this. We suggest that you do an item 8 about every 15 seconds until it finally does break track.

SPACECRAFT Okay, the first time that it happened yesterday, or the other day, whenever that was, I did do several item 8's and it seemed to break track on its own, you know later on, and so after that I kind of gave up, but we'll try that again.

CAPCOM Okay, yeah it's correct.

SPACECRAFT And what appeared to me is that -- to be happening was, that the star just exited the star tracker field of view and that ... but who knows.

CAPCOM Yeah we concur with that Richard, but GNC was suggesting that about every 15 seconds you can try it again and if it doesn't work then it will finally break lock when it leaves the field of view again. Challenger, Houston, we broke lock on TDRS half way through my response for you, did you copy all of it? We're back with you.

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM Reading you loud and clear, Guy.

SPACECRAFT Okay.

CAPCOM And Challenger, we're very intermittent on TDRS now, I'll have you at Botswana in about 2 minutes.

SPACECRAFT Roger, Houston.

CAPCOM Challenger, Houston with you through Botswana for 4 minutes.

SPACECRAFT Roger, Houston, reading you loud and clear.

CAPCOM You're loud and clear also Dan. Challenger, Houston, we're 40 seconds LOS, see you at Yarragadee at 23:03.

SPACECRAFT Roger, Houston.

PAO This is Mission Control, 4 days, 22 hours, 50 minutes mission elapsed time. We have loss of signal through Botswana and we'll pick up again in 13 minutes over Yarragadee. This is Mission Control.

CAPCOM Challenger, Houston, with you through Yarragadee for 6 minutes.

SPACECRAFT Roger, Houston, we've got you loud and clear.

CAPCOM Roger, you too.

SPACECRAFT And Houston, CDR. We're on the way to the star tracker test attitude.

CAPCOM Roger, copy, thank you, Dick.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead, Challenger. Dan, go ahead.

SPACECRAFT Roger, Guy. I made a little slip up this morning, I missed the HRM activation in Dale's column and I was getting ready to possibly do it in the near future, but maybe those guys have an optimum time they'd like to try it sometime later today and if you'd check with them I'll do it as soon as I can or if they have a time they would like it done, you can send that up to me.

CAPCOM Okay, we'll work on that.

SPACECRAFT Okay, it was originally scheduled, it looks like for about 20:45.

CAPCOM Okay, roger, we'll look at it. Challenger, Houston, we're 40 seconds to LOS, we'll see you in Hawaii at 23 + 28.

SPACECRAFT Roger, Houston and we were about 3 minutes late getting in attitude. We're in attitude now with the shutter opened and have not gotten an asterisk yet.

CAPCOM Roger, copy Dick, and it looks like we..

END OF TAPE

SPACECRAFT Roger Houston, and we were about 3 minutes late getting in attitude. We're in attitude now with the shutter open and have not got an asterisk yet.

CAPCOM Roger copy. Dick, and it looks like we've found out why you went back to normal jets but it's something I don't have time to talk about now, we'll get to you later. It was just a funny in the way the software works.

SPACECRAFT Okay, well I appreciate your checking and we can talk about it later. Thanks.

PAO Mission Control, Houston, 4 days, 23 hours, 10 minutes mission elapsed time. Challenger passed out of the range of the Yarragadee station. During that last pass, Commander Richard Truly reporting that they were proceeding with the star tracker acquisition test. We have about 18 minutes before we reacquire again through Hawaii. We could pick up the Tracking Data Relay Satellite after we leave Hawaii. That would be in about 24 minutes. This is Mission Control, Houston.

PAO Mission Control, Houston, standing by for acquisition through Hawaii.

CAPCOM Challenger, Houston with you through Hawaii for 5 1/2.

SPACECRAFT Roger Houston, loud and clear.

CAPCOM Roger, you too and I've got a new time for the HRM activation when you're ready.

SPACECRAFT Okay, ready to copy.

CAPCOM Okay, we'd like to activate it at 5 days, 2 hours plus 30 and deactivate it an hour and a half later at 4 plus 00.

SPACECRAFT Guy got the times, 2 plus 30 activation and 4 hours deactivation.

CAPCOM That's correct and I've got some words on that -- the DAP upmoding to normal jets when you're ready to listen.

SPACECRAFT Okay, go ahead.

CAPCOM Yes, it seems you were quick on the MLS switches and you turned all 3 of them off simultaneously or at least within 1 data cycle and that caused a temporary comm fault. And when the DAP saw the comm fault, it went to free drift and then when that was cleared on the next data cycle, the DAP when it comes back, comes up in normal jets. That all happened in 40 milliseconds.

SPS-8 AIR/GROUND TRANSCRIPT t2414 247:05:41 09/04/83 PAGE 2

SPACECRAFT Okay, another little trap, I reckon. Thanks for checking, that's interesting information I'm glad to know because I was sure confused.

CAPCOM Roger that and that's being fixed by a CR, by the way.

SPACECRAFT Okay, appreciate it and we've had sunset now and I'm going to go ahead and get started back to attitude and then I'll give you a report on this test.

CAPCOM Roger.

SPACECRAFT Okay, Houston, CDR. On the star tracker acquisition test, the second one we did, during the period of time that we had our last -- first got the attitude until now, we only got 4 stars to show asterisks in the table. On each one of them, I attempted to break lock with the item 8 again and I did it a number of times on each one. However, just subectively it looked like it was still random and it just stayed there until it decided to go away and went away. And unfortunately, with -- in the COAS observations, Dan, it was just too bright for Dan to see any stars at that low angle so we got the data on 4 extra stars, looks like.

CAPCOM Roger, copy that Dick. Thank you.

CAPCOM Challenger, Houston, we're about 1 minute to LOS, we'll see you at Buckhorn in 4 minutes.

SPACECRAFT Roger, see you there.

PAO Mission Control, Houston, 4 days, 23 hours, 36 minutes mission elapsed time. We have loss of signal through Hawaii and we'll pick up again over the Continental US in about 2 minutes. During that recent pass, Commander Dick Truly discussing the procedures with the star tracker acquisition test.

END OF TAPE

PAO ...through Hawaii and we'll pick up again over the Continental U.S. in about 2 minutes. During that recent pass, Commander Dick Truly discussing the procedures with the star tracker acquisition test. This is Mission Control. This is Mission Control, standing by for acquisition through Buckhorn.

CAPCOM Challenger, Houston, with you through Buckhorn for 6 and a half.

SPACECRAFT Roger, loud and clear.

CAPCOM You too.

SPACECRAFT And Houston, CDR, I got a question on scheduling for the RMS glow and the tail glow DTOs.

CAPCOM Roger, go ahead.

SPACECRAFT Rog, in looking at the way that they're laid out, it looks like it's going to a bit of a rush between 0102 which is availability time of the RMS glow and 0122 which is the end of the availability of the tail glow. To get them both accomplished and change of cameras, we can probably do it with, be a little bit of a rush. What Dan and I were thinking about suggesting to you was that we schedule the tail glow down at that next night pass at about a time of 20 -- 0235 or something like that and do the RMS glow where it's scheduled and then do the maneuver and the tail glow during that next night pass and we'll shift our meals with no problem to be able to get both of them.

CAPCOM Okay, stand by Dick.

SPACECRAFT Okay, its no problem, we can try it the way it is but I think we'd have better sucess if we could split them up a little bit.

CAPCOM And Dick your plan sounds good to us.

SPACECRAFT Okay, why don't you take a look at the details of it and get us a -- when you would like us to maneuver to the tail glow and what the new availability is and we'll plan on doing it that way. Appreciate it.

CAPCOM Roger, wilco.

SPACECRAFT And Guy, also I wonder if you could -- I've got a comment on Earth observations that you could pass to the, Bob Stevenson or the one, whoever the oceanographers that are working today.

CAPCOM Okay, go ahead.

SPACECRAFT I reported yesterday that the agelhass current which is between East Africa and Madagascar was very quiet and we couldn't see anything in the glitter patterns and we just crossed over it on the last rev and I don't know what has happened between yesterday and today or whether it was cloudy or whatever but it was really spectacular. A lot of spiral eddies and fronts and we think we recorded it.

CAPCOM Sounds great Dick, thank you, we'll pass that along.

SPACECRAFT Okay, thank you.

CAPCOM And Challenger, Houston, we'll be leaving Buckhorn here in a minute, handing over to TDRS.

SPACECRAFT Okay, Houston.

CAPCOM Challenger Houston, with you on TDRS for about 30 minutes.

SPACECRAFT And Houston, CDR. We just handed over to TDRS from the Buckhorn station didn't we?

CAPCOM Roger, that's affirmative, we're on TDRS now.

SPACECRAFT Their support, I understand that Buckhorn is not going to be up for future shuttles...

END OF TAPE

CAPCOM Roger, that's affirmative, we're on TDRS now.

SPACECRAFT Their support, I understand that Buckhorn is not going to be up for future shuttle missions and they have done such a super job through all the shuttle DT, DDT&E flights and the first operational flights and the STS-8 crew would just like to pass them a well done.

CAPCOM Roger, thank you Dick. We'll pass that on to them.

SPACECRAFT You bet.

CAPCOM And Challenger, I've got one message here on one last test on the TAG system whenever you're ready to listen.

SPACECRAFT Okay.

CAPCOM Okay, what we'd like to do now is one last thing just for some data is to expose the paper by having you open the access door for about a minute. And then we're just going to run it through the developer after it has already been exposed and you won't need to that, to monitor it at all after that point. So we'd like you to go down and open the paper access door for about 1 minute and then reclose the door and secure it.

SPACECRAFT Houston, CDR.

CAPCOM And I heard your last call, Dick. We're drooping in and out on TDRS.

SPACECRAFT CDR.

CAPCOM And Challenger, Houston, on UHF through Mila, we are having very intermittent locks-on on TDRS.

SPACECRAFT Hey Jeff. Talking about the -- opening the TAGS access panel for a minute but then you cut out kind of in ... Also it almost slipped my mind that we had not done the RCS hot fire test and if it's okay with you, we'll just get it as soon as we can.

CAPCOM Roger, we're ready whenever you are.

SPACECRAFT Okay, give us a couple or 3 minutes and then we'll get on it.

CAPCOM Okay, and the TAGS test, all I needed someone to do, Dick was to open the paper access door for about 1 minute. And then resecure the door and then we'll just take care of the rest. You don't need to worry about.

STS-8 AIR/GROUND TRANSCRIPT t243j 247:06:20 09/04/83 PAGE 2

SPACECRAFT Okay, Dale is on his way downstairs and he'll open the access door for 1 minute and then secure it.

CAPCOM Roger that. Then we're just going to run a bunch of pages through and you can just leave them in the hopper there.

SPACECRAFT Okay.

CAPCOM And Challenger, Houston, we're about to go LOS, Mila. We will keep trying on TDRS but we'll have Ascension UHF at 0 plus 07.

SPACECRAFT Roger Houston, and we're going to, we're going to go ahead and do the hot fire test and then we'll report to you.

CAPCOM Roger, thank you.

PAO This is Mission Control, Houston. We have intermittent communications through the Tracking Data Relay Satellite.

CAPCOM Challenger, Houston with you on TDRS.

SPACECRAFT Roger Houston, loud and clear and we're on page 10-2 just getting ready to start on the TIC faults.

CAPCOM Roger copy and if we do lose TDRS, Ascension's UHF is down so we'll see you at Botswana at 0 plus 17.

SPACECRAFT Okay, I understand and tell INCO that the TAGS has been opened for 1 minute and closed and he can send up his commands.

CAPCOM Roger, copy Dale. Thank you.

CAPCOM And Challenger, Houston, we'd like for you to go ahead and turn the TACAN's off now that that test is complete.

CAPCOM Challenger, Houston, we have you through Ascension for about 6 minutes.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t244j 247:06:31 9/04/83 PAGE 1

CAPCOM Challenger, Houston we have you through Ascension for about 6 minutes.

SPACECRAFT Roger, copy.

CAPCOM Challenger, Houston.

SPACECRAFT Roger, go ahead.

CAPCOM Roger, you can go ahead and turn off the tacans now that the test has been completed.

SPACECRAFT Okay, Houston, thanks for the reminder.

CAPCOM Roger. Challenger, Houston. Roger, we'd like to see if you could reinitiate the auto, the maneuver in auto.

SPACECRAFT Okay, Houston, I was just noticing, in just 30 minutes we're going to EOIM attitude, do you want us to go -- to make both maneuvers or just go there early?

CAPCOM Roger, Dick, you can go there early. And Challenger, Houston, we're going LOS in about 15 seconds and we'll see you at Botswana at 0 + 17.

PAO Mission Control Houston, standing by for acquisition through Botswana.

CAPCOM Challenger, Houston we have you through Botswana now for about 6 1/2 minutes and we have an exact time for the tail glow maneuver.

SPACECRAFT Roger, Houston, go ahead with the time for the tail glow maneuver.

CAPCOM Okay, the plan is as follows. We'd like you to initiate the maneuver at 5 days, 2 hours and 27 minutes and then the photo opportunity will go from 2 + 31 to 2 + 51. And as soon as that photo opportunity is complete at 5 -- at 2 + 54, we'd like you to go right into the TDRS side load test that was scheduled for 3 + 55. Basically we're just going to do it 1 hour earlier.

SPACECRAFT Okay, we copy all that, sounds like a good idea. Thanks.

CAPCOM Roger that. Challenger, Houston, we're about 45 seconds to LOS, we'll see you next at Guam at 0 + 49.

END OF TAPE

SPACECRAFT Okay, we copy all that, sounds like a good idea. Thanks.

CAPCOM Roger that. Challenger, Houston, we're about 45 seconds to LOS, we'll see you next at Guam at 0 plus 49.

SPACECRAFT Okay, thank you.

PAO Mission Control, Houston, 5 days, 0 hours, 23 minutes mission elapsed time. Challenger is passing out of range of the Botswana station and we'll have a long loss of signal period of about 25 minutes before we pick up over Guam. And that would be on orbit number - just at the start of orbit no. 82. The crew reported earlier that they completed the reaction control system hot fire test. They are running through a series of vehicle checkouts and other experimental objectives this morning. This is mostly a prepare-for-coming-home day. The crew's activities for the remainder of the day are primarily cabin stowage, having already completed the flight control system checkout earlier today. This is Mission Control, Houston.

CAPCOM Challenger, Houston, we have AOS through Guam for 5 and -- for 6 minutes.

SPACECRAFT Roger Houston. And Franklin, can you tell us what the MET is that you're going to want the VTR dump of the RMS survey, the underside of the vehicle?

CAPCOM Stand by, Dan.

SPACECRAFT Okay.

CAPCOM And Challenger, Houston, we got an answer on the VTR time.

SPACECRAFT Okay, go on, Franklin.

CAPCOM That will be at 2 plus 37 over Hawaii about one rev from this one.

SPACECRAFT Okay understand, thanks a lot.

CAPCOM And Challenger, Houston, we got a couple of item entries on SPEC 22.

SPACECRAFT Stand by, Franklin. Okay Franklin.

CAPCOM Okay on that SPEC 22, the minus 2 star tracker shutter to auto, that's on item 16. And we'd like to head the tracker back to track after that's done and we'd like to verify the EOIM activation.

SPACECRAFT Okay, Franklin, that's affirm.

CAPCOM Roger that.

SPACECRAFT And Houston, CDR. I'm sorry, we, I did not activate the EOIM, I'm doing it right now.

CAPCOM We copy, Challenger. Challenger, Houston, we are going LOS, we'll see you next at Hawaii at 1 plus 02.

SPACECRAFT Roger, see you in Hawaii.

PAO Mission Control, Houston, we have loss of signal through Guam and we'll pick up again in about 6 minutes -- 6 and 1/2 minutes through Hawaii.

CAPCOM Challenger, Houston. We have you through Hawaii for about 6 minutes.

SPACECRAFT Okay Houston, (garble)

CAPCOM Say again, Columbia, you were broken.

SPACECRAFT Okay, that transmission was loud and clear Houston. The first one you made was very broken.

CAPCOM Okay, you're loud and clear now. You're loud and clear now, Challenger.

SPACECRAFT Roger, Franklin, thanks.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead, Challenger.

SPACECRAFT Roger, I'm looking through the light intensifier on the RMS glow experiment on the chevrons on the arm, and the arm itself and the two silver and the gold chevron all have about the -- equal amount of glow but the black one has a, at least twice, probably about three times as much glow above it as the others.

CAPCOM Houston copy.

END OF TAPE

SPACECRAFT ... all have about an equal amount of glow but the black has at least twice and probably about 3 times as much glow above it as the others.

CAPCOM Houston, copy. Challenger, Houston, we're going LOS in about a minute. We're going to try TDRS; if not, we'll see you over Buckhorn at 1 + 12.

PAO This is Mission Control Houston, 5 days, 1 hour, 9 minutes mission elapsed time. Challenger beyond the range of the Hawaii station, orbit 82. We'll pick up again in about 2 minutes and 40 seconds during the pass over the Continental United States. In that last communication, Pilot Dan Brandenstein talking about the glow experiment. They are observing the interaction of the oxygen molecules at the altitude at which the Orbiter's flying. As they strike various structures on the Orbiter, including the tail, the OMS pods and the remote manipulator arm. The Orbiter is at an altitude of about 120 nautical miles high. Typically, we have flown the spacecraft at around 160 nautical miles for most missions; however, about the second day or third day into the flight we lowered the Orbiter's altitude down to 120 nautical miles for the purpose of encountering greater density of the random oxygen molecules that do exist up above the Earth's atmosphere. It was noticed on earlier Shuttle flights that in some photography, time-lapse photography, that the crew was doing, or long exposure photography, that there was a glow present around the tail and it was later postulated that that was due to the oxygen molecules impacting on the Orbiter structures. So this test is one to observe the glow that occurs when that happens. We have also been exposing some materials in the cargo bay to the oxygen molecules, that's another reason for flying at that altitude. We're about 50 seconds away from reacquisition over the Continental U.S. through the Buckhorn station. 5 days, 1 hour, 11 minutes mission elapsed time this is Mission Control.

CAPCOM Challenger, Houston, we have you through TDRS for 43 minutes.

SPACECRAFT Roger, Houston, read you loud and clear. Dan has done the glow photography for the RMS and for the EOM pallet, now he's configuring for the OMS pods, we're doing the shopping list stuff, and the EOM pallet didn't have much glow at all from our perspectives, even though the RMS did, as he described.

CAPCOM Houston copies Challenger.

SPACECRAFT Okay.

CAPCOM Challenger, Houston, we had a momentary drop in comm, we're back with you on TDRS.

STS-8 AIR/GROUND TRANSCRIPT (246) 247:07:35 09/04/83 PAGE 2

SPACECRAFT Roger, loud and clear. Houston, Challenger.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT Okay we finished up the first part of the glow stuff with the RMS. We ran through the sequence on the RMS, on the EOIM pallets, on the OMS pod, and then Sheppard requested that we go off and shoot a star. We got the constellation Cassiopeia and we ran all those through that same sequence. And now we're going to start up for the next night pass and do the -- with the grating on it.

CAPCOM Houston copy. Challenger, Houston, how do you read?

SPACECRAFT Loud and clear now, but for a while I guess we dropped out.

CAPCOM That's affirm, Dick and we have about a 2 1/2 minute pass and we have a quick note to send up to you which relates to the cabin pressure, if you're ready to copy?

SPACECRAFT Okay, ready to copy.

CAPCOM Roger, we're going to have to do a cabin repressurization at Guam at about 2 + 23 and the reason for that is that the system 1 N2 regulator is a bit sluggish. We're seeing a slight drop in pressure, sufficient to give an O2 flow alarm...

END OF TAPE

CAPCOM . . . 23. And the reason for that is that the system 1 N2 regulator is a bit sluggish. We're seeing a slight drop in pressure sufficient to give an O2 flow alarm. We'd like to swap systems and see if this is a pressure problem, a regulator unique problem, or a normal system phenomenon. The only change to the orbit OPS checklist on page 5-10 is, we'd like the - on panel L2, the O2/N2 controller valve system 1 to close and 2 to open. And we'd like you to use system 1 first to pressurize with O2, and then system 2, to pressurize with N2. Do not inhibit the O2 and N2 flow parameters. Expect a high flow caution and warning alarms during repressurization and after you're through with the repressurization we'd like you to return to the nominal O2/N2 controller configuration.

SPACECRAFT Okay, standby.

CAPCOM And Challenger, Houston, we're going to go LOS in about 30 seconds. We're going to see you next at Botswana at 1 plus 52.

SPACECRAFT Okay fine, when we get to Botswana, I'll read it back to you and make sure I understand for the Guam test.

CAPCOM Roger that, Dick.

CAPCOM Challenger, Houston, we have you through Botswana for 6 minutes.

SPACECRAFT Roger Houston, loud and clear. And let me read back this ECLS procedure if I may.

CAPCOM Roger, we're ready.

SPACECRAFT Okay, over Guam when we have data at 2 plus 23, we're going to do a manual repress except on panel L2. Let's see, we're going to close the O2/N2 controller no. 1 and open no. 2 and then that means if when we press with O2, we'll use system 1 and then when we press with N2 for the procedure, we'll use system 2. And then, during the test we will not inhibit the O2 and N2 flow parameters, parameters 24 and 54. Is that charlie?

CAPCOM Roger Dick, that's, we concur.

SPACECRAFT Okay, we'll be ready at Guam to do that. Wonder if I can ask you a question about a photo setup.

CAPCOM Go ahead.

SPACECRAFT Okay, back on STS-2 when we were doing our lightening work, there was a setup for the 70mm Hasselblad to open the lens setting and record lightening flashes at night and

I don't remember it, nor do I have it onboard and I was wondering if you could check with Fernando Ramos, one of those guys that might have that F-stop and settings in the procedure and read it up to me later on because we have seen a tremendous amount of -- around the world of night lightening and I thought we might could get a little, small amount of that data.

CAPCOM Roger Dick, we're looking into it. We'll get back with you.

SPACECRAFT Okay, thanks a million, appreciate it.

SPACECRAFT Houston, MS1.

CAPCOM Go ahead, Challenger.

SPACECRAFT Yes, I've got the information on the TAGS if you want it now.

CAPCOM Go ahead.

SPACECRAFT Okay, I just went down and checked the paper tray, and we had 14 sheets in there. This is post opening it up thing to expose the paper. It looks like the developer is working because the first sheet out is black and then they get progressively gray until about the tenth sheet is white and they're all white after that.

CAPCOM Roger Dale, we copy. Thanks for the data.

SPACECRAFT Okay.

CAPCOM And Challenger, in order to regain telemetry we are going to need a panel command switch action. And this will be some time before Guam.

SPACECRAFT Whoops, I just did it.

CAPCOM Challenger, Houston, did you copy the panel command message I just gave you?

END OF TAPE

CAPCOM ...and this will be sometime before Guam.

SPACECRAFT Whoops, I just did it.

CAPCOM Challenger, Houston, did you copy the panel command message I just gave you?

SPACECRAFT Houston, Challenger, affirmative and I did answer and I did do the panel in command.

CAPCOM Okay, thank you. And Challenger, Houston we're going LOS, we'll see you at Guam at 2 + 23, and you're go for the APU cool off.

SPACECRAFT Okay.

PAO Mission Control Houston, 5 days, 1 hour, 58 minutes mission elapsed time. Challenger out of range of the Botswana station and we're about 24 minutes from picking up again over Guam. This is Mission Control Houston.

PAO This is Shuttle Control at 5 days, 2 hours, 10 minutes mission elapsed time. The change-of-shift briefing scheduled for 4:30 a.m. Central Daylight Time has been cancelled. To repeat, the change of shift briefing scheduled for 4:30 a.m. Central Daylight Time has been cancelled.

PAO This is Shuttle Control, the change-of-shift briefing previously scheduled for 5:00 a.m. Central Daylight Time has been cancelled.

PAO This is Shuttle Control, 5 days, 2 hours, 22 minutes mission elapsed time. Guam will have acquisition of Challenger in about 15 seconds.

CAPCOM Challenger, Houston with you through Guam for 6 1/2.

SPACECRAFT Roger, Houston, and I need to talk to you, we've had a redundant set split and, over.

CAPCOM Roger, copy, we'll be looking at the data here in a second.

SPACECRAFT Okay, while you're getting the data up let me tell you what happened. GNC wasn't doing anything except clicking along. The first message detected by both GPCs was a GPC BITE on number 1, and on the same second, on the fault page the set split. I have -- since no jets are firing and we were just about to come up in Guam, I have elected to not take GPC 1 to halt. Both GPC's are still in run and it looks like a pure set split to me.

CAPCOM Okay copy, standby one.

SPACECRAFT Roger. Houston, Challenger, you still there?

CAPCOM Roger, we're still with you for another 3 1/2. DPS is still looking at the data, Dick.

SPACECRAFT Okay, we hope so --- in the middle of all this as it might happen, we tripped the lower limit on the cabin pressure alarm, Dan lowered it about 1/10 of a volt just so we could turn off the caution and warning and the set split happened in the middle of all that. I would just as soon go ahead and repress the cabin per your procedure so that we can get that out of the way and not have to work 2 things at once.

CAPCOM Okay, standby.

SPACECRAFT Okay. Dan can be doing that in parallel. He understands the procedure that you wanted and I'll stay with you with the DPS.

CAPCOM Okay and Dan's got a go-ahead for that.

SPACECRAFT Okay.

CAPCOM Okay, Dick, on your GPC, what we'd like for you to do is go to the Orbit Pocket Checklist, page 3-10, first GPC fail and consider the failed GPC as GPC number 1.

SPACECRAFT Okay, I'm turning to that page and that's what I would have done had I not elected to come up with both of them still running and I'll follow that procedure.

CAPCOM Roger, thank you.

SPACECRAFT Okay Houston, in step number 7, you want me to bring up the freeze dried or stick with GPC 2?

CAPCOM That's a negative, Dick. Do not bring up the freeze dried, and we've got about 20 seconds left here, we'll see you at Hawaii in 7 minutes at 2 + 37.

SPACECRAFT Okay and I couldn't concur more, I'll see you there and I'll bring you up to speed when we come AOS.

CAPCOM Rog.

PAO This is Shuttle Control, Guam has loss of signal. During this pass, Challenger's Commander Dick Truly reported a redundant set split - -

END OF TAPE

SPACECRAFT (garble). I'll see you there and I'll bring you up the (garble) when (garble).

CAPCOM Rog.

PAO This is Shuttle Control, Guam has loss of signal. During this pass, Challenger's Commander, Dick Truly reported a redundant set split of the general purpose computers. That's where two computers assigned to the same activity disagree. GPC no. 1 is considered the failed computer in this instance. And Truly is now performing malfunction procedures, troubleshooting that problem. Hawaii is the next station in 6 1/2 minutes at 5 days, 2 hours, 30 minutes mission elapsed time, this is Shuttle Control, Houston.

PAO This is Shuttle Control, 5 days, 2 hours, 36 minutes mission elapsed time, standing by for acquisition at Hawaii.

CAPCOM Challenger, Houston's with you at Hawaii for 6 minutes.

SPACECRAFT Roger Houston and we need to talk some more here.

CAPCOM Roger, ready to copy.

SPACECRAFT Okay on page 3-10, let's see, got down to step 9 and when I set up SPEC 0 to restring, an automatic SPEC 0 showed up on -- when I did the OPS 201 PRO, an automatic SPEC 0 showed up on OPS 20 -- on each of the CRT's that I'm looking at that's in GNC. And the first time that I did a resume it would not resume. And Dale and Guy and I or Dan is working the cabin pressure. Dale and Guy and I were sitting here discussing about why this should happen because I think on a normal OPS transition, that the last thing that happens if you're going out to 2 mass memories that are not there but in this case never should have gone out. At any rate, just before AOS, I decided to try another resume and at this time I tried another resume and sure enough the resume worked and I am now looking at the original display which is a GNC system summary one. A display instead of a SPEC.

CAPCOM Roger, we copy Richard.

SPACECRAFT Alright, Dale corrects me, I said one thing wrong. When I did the second resume, I did resume down to the OPS display and then later called up the system summary so that was incorrect.

CAPCOM Roger, we copy Richard.

STS-8 AIR/GROUND TRANSCRIPT t249j 247:09:01 9/4/83 PAGE 2

SPACECRAFT So I'm not sure that I, I have just never seen that exact chain of events before and I'm ready to press on or ask your advice.

CAPCOM Roger Richard, we copy the late acquisition and we'll be getting to you as soon as DPS has a recommendation.

SPACECRAFT Houston, CRT, that machine -- Houston, CDR, I did, I have been able to go back to the auto DAP and GNC apparently is controlling because jets are firing to return to the EOIM attitude.

CAPCOM Roger, we copy, Richard.

SPACECRAFT Houston, CDR.

CAPCOM Roger, Richard.

SPACECRAFT The other thing that Dale and I have been talking about is -- and I didn't think this was the case, was that, if by chance if we had had SPEC 0 up on both CRT 1 and 3 and a display above it when we did the OPS mode recall. We do not remember whether or not that automatically flushes displays which would explain the first thing, it would not explain in our minds why we did a resume on the CRT and it wouldn't resume but I cannot remember the answer to the business about the OPS mode recall flushing SPECS, I mean flushing displays.

CAPCOM Roger, we understand Richard and we're with you at TDRS.

END OF TAPE

SPACECRAFT ... did a resume on the CRT and it wouldn't resume but I, I cannot remember the answer to the business about the optional recall flushing specs, I mean flushing displays.

CAPCOM Roger, we understand, Richard, and we're with you with TDRS.

SPACECRAFT Good.

CAPCOM Richard, for your information, the experts say that an OPS mode recall retains displays and specs and we have looked at your situation and we want you to proceed with the procedures.

SPACECRAFT Okay, we'll proceed with the printed procedure.

CAPCOM Roger, that.

SPACECRAFT Let me make one thing clear, John, just so you'll know what the configuration was when I did the OPS 201 recall. I definitely did have a system summary display up on CRT 1 at the time I did the OPS 201 PRO because I wanted to watch the strings as they got reassigned and it definitely did get flushed when I did do the OPS 201 PRO.

CAPCOM Roger, Richard we copy.

SPACECRAFT Okay, we're going to continue with the printed procedure and I'm getting back into it on, in step 10.

CAPCOM Roger, that.

SPACECRAFT Okay, Houston, we're in block 9 on page 5-45 of MAL, and we're going to do a software dump of GPC 2 if you concur.

CAPCOM Roger, Richard, we're ready for it.

SPACECRAFT And Houston, CDR, NSSR 2 had asked for one of the OPS recorders to be in record A and since we're AOS, we've got 1 in playback and 2 in standby.

CAPCOM Roger, we copy, 1 in playback, 2 standby.

SPACECRAFT Okay, now we see OPS recorder 2 in record A and we'll wait until it gets within the limits and start the dump.

CAPCOM Roger, Richard, go ahead and start the dump now.

PAO This is Shuttle Control, Dick Truly is continuing in the malfunction procedures on general purpose computer number 1. That GPC 1 and one other computer were assigned to guidance navigation and ...

SPACECRAFT ...just want to make sure we did this right the first time. I'm showing it record A track 4 reverse in 23 percent which does not meet the criteria on NSSR2.

CAPCOM Roger, we copy that Richard.

PAO Number 1 was one of two computers assigned to guidance navigation and control functions...

CAPCOM ... switching tracks for you.

SPACECRAFT ...and forward 19 percent, we'll start the dump.

CAPCOM Roger, go with the dump.

PAO The other computer is continuing to monitor and control that GNC function and there's been no loss of that function. We'll stand by for further communications on the problem.

SPACECRAFT Okay, Houston, the dump is on the way, its on OPS recorder 2, track 5 running forward 26 percent and the time started about 10 seconds ago.

CAPCOM Roger, we copy Richard.

SPACECRAFT Okay, Houston the software dump is complete and we're moving into block 11 and going to hardware dump GPC 1.

CAPCOM Roger, that Richard.

SPACECRAFT Okay, Houston, the...Okay Houston, the hardware dump has started, it's on OPS recorder 2 track 5 moving forward. It started at 35 percent at a time of 2 hours 53 minutes and 15 seconds.

CAPCOM Roger, thank you Richard we copy.

SPACECRAFT Okay, Houston, according to the clock we've -- a double dump of the pads...GPC 1 is complete.

CAPCOM Roger, we copy Richard.

SPACECRAFT Okay, Houston, we're in block 12 now and are going to attempt to re IPL on GPC 1.

END OF TAPE

CAPCOM Roger, we copy Richard.

SPACECRAFT Okay, Houston, we're in block 12 now and are going to attempt to re IPL on GPC 1 if you concur.

CAPCOM Roger, Richard, we concur.

SPACECRAFT Okay, it's in work.

CAPCOM Challenger, Houston just be advised we may lose voice, we're getting marginal attitudes.

SPACECRAFT Roger, I'm not sure I copied all of that, John.

CAPCOM Roger, Richard, we may lose voice with you, if we do we will see you at Botswana...

SPACECRAFT Okay, Houston, if you're still there, I'm in block 13 and I'm assuming that you want us to go into, we have a choice of going into block 14 or 16, do you have a vote?

CAPCOM Challenger we'd like you to go to block 16.

PAO This is Shuttle Control at 5 days 3 hours 11 minutes mission elapsed time. Data processing systems engineer Michael Darnell reports that telemetry indicates that the malfunction procedure has been successful, GPC number 1 has been recovered and is back in the set, and operating properly. This is Shuttle Control, 5 days 3 hours 25 minutes mission elapsed time. Challenger approaching UHF voice acquisition through Botswana.

CAPCOM Challenger, Houston, we're with you at Botswana for 6 minutes.

SPACECRAFT Roger, Houston, how me?

CAPCOM Roger, loud and clear.

SPACECRAFT Okay, John we're back in good shape, we've got a -- GPC 1 went back into the set with a, by the book. Got all the blocks that I went through, and I think you know them all, after we went LOS all we did was restring and bring GPC back in and now we're essentially in the nominal configuration.

CAPCOM Understand Richard and it looks good to us as well.

SPACECRAFT Okay, one thing did happen, that was slightly different than the way you had asked us to do it. We started getting CP02 messages as the PP02 slowly rose after we had the system secured and I elected -- so we jacked up the PP02 limits to 3.6 to quiet down the system and just so that I could work one

STS-8 AIR/GROUND TRANSCRIPT t251j 247:09:28 9/04/83 PAGE 2

problem at a time, I elected to close the WCS vacuum vent valve,
so that's our present configuration.

CAPCOM Roger.

END OF TAPE

SPACECRAFT .. go to limits to 3.6 to quieten down the system and just so that I could work one problem at a time, I elected to close the WCS vacuum vent valve, so that's our present configuration.

CAPCOM Roger, we copy Richard.

SPACECRAFT And we got the hours if you'd like to reopen it and look at the configuration for however long you'd like, just let me know.

CAPCOM Roger that, it's not required, Richard.

SPACECRAFT Okay. Houston, CDR.

CAPCOM Roger, go Richard.

SPACECRAFT I, just a second, standby please. Okay on the waste water dump, we delayed it, it was delayed a little bit because of the GPC stuff and the wiz is in use and, so I'm just delaying starting the waste water dump a little bit. Looking at the, well first of all let me tell you that onboard, the stowing situation in good shape, we did some of it, a good bit of it, this morning, so we're in good shape configuration wise from a crew systems point of view onboard with regards to the cabin. And looking at what we had as a plan schedule, we've already got the tail glow camera set up, so if you can find a time we could go do the tail glow, we'd be glad to do that, and also I noticed that the maneuver to the TDRS's side lobe test is still in front of us so, if you'll just take a look and tell us what you'd like to do about the maneuvers and that kind of stuff, we'll just go ahead about our business.

CAPCOM Roger, Richard, we will give you a, we would like to do the tail glow next rev and continue with the TDRS side lobe test as planned.

SPACECRAFT Okay. Then all I'll need is maneuver time and availability time and we'll do it.

CAPCOM Roger that. And Challenger, Houston, we're one minute to LOS here at Botswana, we'll see you at Indian Ocean in 4 minutes and Richard you can delete doing the visual acuity test now if you want and get that activity when you want to and as well on the HRM, you can do that activity when you would like and we would like an hour and a half of data, and just record the times please.

SPACECRAFT Okay. I think the HRM has already been activated; however, I didn't do it so I don't know the times, but that's no problem, and we'll, no problem on the visual acuity. We'll get all that stuff done, no problem.

CAPCOM Roger that and we'll get you an attitude as you requested.

SPACECRAFT Okiedoke.

CAPCOM And Richard, we'd like you to get the APU 3 controller to off.

SPACECRAFT Okay.

PAO This is Shuttle Control. Challenger has moved out of range of Botswana. Acquisition next through the Indian Ocean station in 4 minutes. During this Botswana pass, Dick Truly confirmed that general purpose computer number one is back in good shape, went back into the set by the book, he said. All operations normal and he reported the cabin stowage situation is in good shape. Activities scheduled for a good part of the day. We'll stand by for acquisition through IOS in about 3 minutes. At 5 days, 3 hours, 33 minutes mission elapsed time, this is Shuttle Control Houston.

CAPCOM Challenger, Houston with you at Indian Ocean and just a correction on what I told you going LOS, that was the APU 3 controller power to off.

SPACECRAFT That's affirm, I turned the APU controller power number 3 to off.

CAPCOM Roger and we concur, Richard. That was just my mistake on the call.

SPACECRAFT Okay.

CAPCOM Challenger, Houston, we're going LOS here in 15 seconds, see you at Guam at 3 + 58.

SPACECRAFT Okay, Guam at 3 + 58.

CAPCOM Roger and your configuration looks good to us all around.

END OF TAPE

CAPCOM Challenger, Houston, we are going LOS here in 15 seconds. See you at Guam at 3 plus 58.

SPACECRAFT Okay, Guam at 3 plus 58.

CAPCOM Roger and your configuration looks good to us all around.

SPACECRAFT Super, thank you, John, and we'll do the waste water dump and be in good shape at Guam. See you later.

CAPCOM Roger.

PAO This is Shuttle Control. Indian Ocean station has loss of signal with Challenger. Next station is Guam in 18 1/2 minutes at 5 days, 3 hours, 40 minutes mission elapsed time, this is Shuttle Control, Houston.

PAO This is Shuttle Control, 5 days, 3 hours, 58 minutes mission elapsed time. Challenger about 30 seconds away from acquisition through Guam.

CAPCOM Challenger, Houston with you at Guam for 3 minutes.

SPACECRAFT Roger Houston, loud and clear and I guess I was a little confused about the maneuvers, John, tell me. I'm set up to do the maneuver to the TDRS side lobe test attitude. I'm about 2 minutes late if we'd known you as Guam, is that what you wanted me to do so I all I got to do is start.

CAPCOM Roger that, Richard. And you have plenty of time.

SPACECRAFT Okay, I'm starting the maneuver now.

CAPCOM And Challenger, Houston, INCO is going to be doing NSP commands so you can ignore the message.

SPACECRAFT Okay and the maneuver's in progress.

CAPCOM Roger and Richard, we would like to have the VTR playback of the Orbiter survey at Hawaii. So at AOS, Hawaii, you could go ahead and start the dump. We'll continue with it through TDRS and we will let you know when to stop. And just for your information, we will go ahead and do that side lobe test after the dump.

SPACECRAFT Okay, I understand. We'll be prepared at Hawaii, AOS and when you say you're ready, we'll -- all we got to do is hit one switch.

CAPCOM Roger, we'll do that.

STS-8 AIR/GROUND TRANSCRIPT t253j 247:10:09 09/04/83 PAGE 2

SPACECRAFT And Houston, CDR. The waste water dump, you want to dump it all the way or where would you like to stop it?

CAPCOM Roger, Richard, you have dumped enough. You can secure it now.

SPACECRAFT Okay. And Houston, CDR.

CAPCOM Roger.

SPACECRAFT Roger, the sun was setting but we were interested in trying to see the cyclone in the Guam area and about, so I guess 3 minutes ago or so, we passed overhead the very edge of a tremendous area of clouds. It was solid. Looking down on it, it was -- almost looked like high cirrus as far as we could see into the night. And it was obviously imbedded with thunderstorms because looking at the lightening; however, the sun angle was so low that we did not get any pictures of it.

CAPCOM Roger, we copy Richard and we're going LOS here in 30 seconds, we'll see you in Hawaii in 8 minutes.

SPACECRAFT Okay, see you there.

PAO This is Shuttle Control. Loss of signal at Guam. Next acquisition, Hawaii in 7 1/2 minutes at 5 days, 4 hours, 3 minutes mission elapsed time. This is Shuttle Control, Houston.

PAO This is Shuttle Control, 5 days, 4 hours, 10 minutes mission elapsed time. Challenger coming up on acquisition through Hawaii with a handover to TDRS. We should get the video tape recorder dump started at Hawaii. This is the television of -- through the end effector camera of the survey from yesterday of the bottom of the Orbiter.

CAPCOM Challenger, Houston's with you at Hawaii for 6 minutes and you can start the dump.

SPACECRAFT Okay, it's on the way.

CAPCOM And we would like a GNC SPEC 1 for variable parameters, please. And we're getting good TV picture, Richard.

SPACECRAFT Okay, that's CRT 1 ...-

END OF TAPE

SPACECRAFT Okay, its on the way.

CAPCOM And we would like a GNC SPEC 1 for variable parameters, please. And we're getting good TV picture, Richard.

SPACECRAFT Okay, that's CRT 1 AZU SPEC.

CAPCOM Thank you and Richard, just for your information, GNC says your IMU 1 data looks real good to us.

SPACECRAFT Okay, thank you.

CAPCOM And I have your attitude and time for photo for the tail glow when you're ready to copy.

SPACECRAFT Just a second. Go ahead with the numbers.

CAPCOM Roger, maneuver to the tail glow attitude and CRT 1 is yours. Remove -- maneuver to the tail glow attitude with a target number 2, body vector 1, omicron 270. Do it with the A1 auto burn DAP, initiate track, 5 days 5 hours 10 minutes. Begin the tail glow photos during a photo opportunity between 5 days 5 hours, 32 to 5 hours 49 with a delta T of 17 minutes.

SPACECRAFT Okay, the attitude is 21 and 270, A1 DAP, initiate maneuver time at 5 hours and 10 minutes and tail glow availability time is 5 + 32 to 5 + 49.

CAPCOM That's a good readback Richard, and just for your information, the important part of this experiment is the tail glow with the defraction grading. It is optional for you to do the thruster firing part if you want to. If you elect to do the thruster firing, we don't want it to interfere with the glow part of the experiment.

SPACECRAFT Stand by one. Okay, John, we've got plenty of time to do it as printed. We've got enough film left to make it through that printed procedure 1. If you would just like the first part of the procedure with the various cameras settings instead of the jet firings, let us know.

SPACECRAFT In other words John, we intend to do the procedure as printed and we think we can get both the exposures and the ones with the jet firings with no problem.

CAPCOM Roger, we understand Richard and if you have time to do it, Payloads would like to have it.

SPACECRAFT Okay.

SPACECRAFT Okay, John, in the picture now you're seeing the bottom of the starboard wings, and you can see that at various points we stopped and zoomed in just to get closer looks at the various places.

CAPCOM Yes, you really...

SPACECRAFT There you see one of the latching gear doors in the starboard bay.

CAPCOM Roger, you really did a great job on all that photography, Dale, and your zooming in is really fantastic.

SPACECRAFT That was really fun for us to see. The bottom of the Orbiter is not something that we have a chance to look at very much and it was fun doing it.

CAPCOM Roger, and we're interested in any of your commentary on this.

SPACECRAFT We're also lucky that we ended up -- we didn't have much time but we ended up being on the daylight side with the sun angles good here, so we got a good view.

CAPCOM Roger.

SPACECRAFT Now I think we're going to, we're going to pan to the left here, we'll pick up the elevons, and GNC can look here and see where his elevons are placed today. There's the starboard, you can see the outboard one, looks like it's trailed, or up, and the inboard is down.

CAPCOM Roger, we see it, Dale.

SPACECRAFT And I believe Richard, yes, Richard zoomed in right here so you get a closer view of the inboard. How much more time do we have John.

CAPCOM Roger, we're about 20 seconds here to LOS Hawaii but keep talking we're going to try to pick up TDRS.

SPACECRAFT Okay. Maybe that was the body flap in the inboard on the, on the starboard side, I'm not sure.

END OF TAPE

SPACECRAFT Okay. Maybe that was the body flap of the inboard on the starboard side, I'm not sure. (garble) zoom in on it. John we stopped the tape and we lost you, are you ready to pick back up?

CAPCOM Roger we are, we have a good lock up with TDRS now.

SPACECRAFT And that was the body flap and I guess that's the inboard on the portside probably.

CAPCOM Roger. And we're getting another good picture now, Dale.

SPACECRAFT Great. Okay, now we go to the left and there you see the tip of the port wing, and you notice, oh 4 or 5 feet in from the tip there, there's a small white streak and here's where Richard tried to talk me into getting it centered in the frame and I got into a reach limit, so you'll see me go back after that. Then we'll try to zoom in on that streak. And there you can see that it's not really anything important, just probably a streak caused by some gap filler.

CAPCOM Roger we can see the streak, Dale, thanks.

SPACECRAFT And here's the Orbiter doing a barrel roll.

CAPCOM Roger and the Earth is going with it.

SPACECRAFT That's because we were in -ZLV John, the Earth's got to go wherever we do. Here you can see the port line in your door again, and the body flap. So it looks like both starboard elevons must be a little bit up because we really can't see them there in that view.

CAPCOM Roger.

SPACECRAFT And for those of you who aren't familiar with the RMS, what we've really done here is stuck the arm out, the upper boom out straight to the port, and then the elbow we bent down 90 degrees, then the wrist about 90 degrees in, and that allows us to see the bottom of the vehicle and then using the wrist pitch, wrist yaw and wrist roll joints, we just try to get as many views of the bottom as we can. The sequence worked out real well, you can see we saw a good portion of the bottom of the vehicle. Now we're right at the end, or beginning to bring the arm back up to a point where we can put it back in the bay. And here you see the top of the wing. Hey, we're having a little trouble with the VDR, John, standby.

CAPCOM Roger, standing by Dale.

SPACECRAFT Okay, John, I guess what would happen is we switched to another tape at that point and that one we've already stowed down in the return to Houston bag, but that was essentially the end of the sequence.

CAPCOM Roger, we appreciate the test Dale, we have the data.

SPACECRAFT Okay. And Houston, CDR, I guess the only additional comment that I'd make to that RMS sequence that you saw was, is that as Dale positioned the arm, it was comfortable, because between the eyeball view that we could scrunch up and get out the corner of the windows and the payload bay TV's, there was never any concern on our part that we were getting close to any part of the structure.

CAPCOM Roger that.

SPACECRAFT And John since that's probably the end of TDRS and RMS talk for this flight there's one guy that I'd like to say a few words about and that's (garble) Gomar who's been there at JSC from up in Canada for quite a few years and is largely responsible for all the good stuff that we've seen from the arm over these T&E flights. I was a late comer to the RMS stuff but I know Richard and all the rest of the guys that flew the arm on 2, 3, 4 and 7 and we on 8, really appreciate his efforts and wish him good luck back up in Canada.

CAPCOM Roger that Dale, and you can go ahead now to the TDRS side lobe test please.

SPACECRAFT Okay, Dick and Dan are starting that up right now. Thanks a lot.

CAPCOM And TDRS comm may be in and out the rest of the pass, if we do lose you and don't recover we'll see you at Botswana at 4 + 59.

END OF TAPE

SPACECRAFT . . . Okay. Dick and Dan are starting that up right now. Thanks a lot.

CAPCOM And TDRS comm may be in and out the rest of the pass. If we do lose you and don't recover, we will see you at Botswana at 4 plus 59.

SPACECRAFT Okay, we understand and Dick says we're at attitude now.

CAPCOM Roger, we will start the test.

SPACECRAFT Hey John, stand by one, Richard is checking the attitude here again.

CAPCOM Roger that, we'll stand by.

SPACECRAFT Roger John. I just had a start because I looked at the numbers and they didn't ring a bell but I've rechecked them and we are -- I'm showing we are at attitude.

CAPCOM Roger and we concur, Richard. Your attitude looks good.

SPACECRAFT Okay.

CAPCOM INCO is starting the test.

SPACECRAFT Hey Houston, Challenger, the remaining gas experiments have been deactivated and I did get the HRM started and I'll give you the time on that in a second.

CAPCOM Roger Dale.

SPACECRAFT Okay Houston, Guy activated the HRM at 5 days, 3 hours and 15 minutes.

CAPCOM Copy, Dale.

SPACECRAFT And Houston, CDR. Just to confirm with the tail glow now the maneuver initiate being at 0510, I'm assuming as soon as we're through with the tail glow, you'd like us to go to the EOIM attitude.

CAPCOM That's affirmative, Richard.

SPACECRAFT Okay.

PAO This is Shuttle Control. A playback of 27 seconds of tape showing Mission Specialist Dale Gardner in a sleep restraint will be at 6:30 a.m. central daylight time.

STS-8 AIR/GROUND TRANSCRIPT t256j 247:10:57 09/04/83 PAGE 2

PAO This is Shuttle Control. At 6:30 a.m. central daylight time, there will be a tape playback of Dale Gardner in the sleep restraint aboard Challenger, 6:30 a.m.

SPACECRAFT Houston, (garble) with your keying but could not understand.

CAPCOM Negative Challenger, we read you loud and clear but we are not calling.

SPACECRAFT Okay.

PAO This is Shuttle Control, 5 days, 4 hours, 59 minutes mission elapsed time, standing by for acquisition at Botswana.

CAPCOM Challenger, Houston with you through Botswana for 6 minutes.

SPACECRAFT Roger Houston, loud and clear.

CAPCOM Roger.

CAPCOM Challenger, Houston.

CAPCOM Challenger, Houston.

SPACECRAFT Roger, go ahead.

CAPCOM Roger Richard, no hurry but when you've got a minute I've got ...

END OF TAPE

CAPCOM Challenger, Houston.

SPACECRAFT Roger, go ahead.

CAPCOM Roger Richard, no hurry but when you've got a minute, I've got a message on the way we're going to handle the lamp and fire suppression test. And also an answer to your question about lightning photography.

SPACECRAFT Standby one.

SPACECRAFT Okay, Fish, go ahead.

CAPCOM Roger Richard, for the lamp and fire suppression test, we wish to test the sensor A in bay 3, so prior to performing that test, we'd like you to push in the circuit breaker main B smoke detection breaker in bay one B3A. Then we'd like you to perform the test and post test, we'd like you to again open that breaker.

SPACECRAFT Okay, understand.

CAPCOM Roger, and for the lightning photography, you'll have an option of using either the 70mm or the 35mm. If you wish to use the 35mm, you can use the photo TV checklist, page 3-15 for the setup. They prefer black and white photography and you can use the F-stop settings that are given for day or night in the checklist. They recommend a focusing at infinity and not using the interval ohmmeter.

SPACECRAFT Okay, go ahead.

CAPCOM Rog, and for the 70mm, you can open the F-stops since you have a slower film and set the speed for bulb and just push the shutter to determine the shutter speed and if you are fortunate enough to catch some lightning, that should register on your film.

SPACECRAFT Okay, understand.

CAPCOM Roger, we're 15 sec LOS, see you at Indian Ocean in 2 min.

SPACECRAFT Okay, see you there.

CAPCOM Challenger, Houston with you through Indian Ocean for 7 min.

SPACECRAFT Roger, Houston and loud and clear and we've got to move the type B into start to go to (garble). 5 hrs. and 10 min.

CAPCOM Roger, we copy.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead.

CAPCOM Roger, we would like you to delay the glow maneuver until we give you a go.

SPACECRAFT Understand, delay the glow maneuver until when?

CAPCOM Until we give you a go from Mission Control.

SPACECRAFT Okay.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead, Richard

SPACECRAFT Roger, I wonder if I could get you to pass a personal thanks and also a thanks and a thumbs up from the STS-8 crew to the folks that work the Indian Ocean Station. I understand this is the last mission they're going to support, but every since STS-1 they've supported the Shuttle in grand style and we're up here looking out the window at the Indian Ocean, and we really appreciate their work.

CAPCOM Roger, we at Mission Control certainly echo your appreciation, they've done a super job.

SPACECRAFT Super.

CAPCOM Challenger, Houston.

SPACECRAFT Yes.

CAPCOM Roger. Reference your attitude, we would like you to stay in your current attitude for orbit 85. This is so the ground can repeat the TDRS side boating tests for one more rev. During that time, you should have available some stars of opportunity to enable the IMU alignment. And we would plan to give you a new time for initiation to the tail glow attitude on orbit 86.

SPACECRAFT Okay, Bill, that will be fine with Dan and me.

CAPCOM Roger.

CAPCOM Challenger, Houston. We're 30 sec LOS. See you next Hawaii, at 5 plus 45.

SPACECRAFT Roger, on the beach in Hawaii.

END OF TAPE

CAPCOM Roger.

CAPCOM Challenger, Houston, we're 30 seconds LOS, see you next Hawaii at 5 plus 45.

SPACECRAFT Roger, on the beach at Hawaii.

PAO This is Shuttle control, Indian Ocean station has loss of signal. Next tracking station with Challenger is Hawaii in 30 minutes, about 28 and a half minutes. Challenger just beginning orbit number 85 at this time. At 5 days, 5 hours, 16 minutes, mission elapsed time, this is Shuttle control, Houston.

PAO This is Shuttle control, 5 days, 5 hours, 44 minutes, mission elapsed time. Challenger 30 seconds away from Hawaii AOS.

CAPCOM Challenger, Houston with you through Hawaii for 6 minutes.

CAPCOM Challenger, Houston, I have the attitude for the tail glow when you're ready to copy.

SPACECRAFT Okay, Houston, we're ready to copy.

CAPCOM Roger, Dan, your target will be 2, body vector 1, and omnicon 270, DAP will be A1 auto vern, initiate track at 6 plus 40. When your tail glow test is complete, you should return to the EOIM attitude.

SPACECRAFT . . . do you have the availability times?

CAPCOM Roger, Dan, your photo opportunity will be from 5 days, 6 hours, 59 minutes to 5 days, 7 hours, 19 minutes, delta time, 20 minutes.

SPACECRAFT Roger, we copy that.

CAPCOM Roger, Dan.

CAPCOM And Challenger, Houston.

SPACECRAFT Go ahead.

CAPCOM Roger, Dan, are you making any inputs to CRT-4 at this time?

SPACECRAFT No.

CAPCOM Roger, Dan, you want to give your scratch pad line a check?

STS-8 AIR/GROUND TRANSCRIPT t258j 247:11:45 09/04/83 PAGE 2

SPACECRAFT Okay, we cleared it.

CAPCOM Roger, Dan, we copy.

CAPCOM Challenger, Houston, 40 seconds LOS, we'll try to reacquire on TDRS, the side load test may prevent us from getting you at AGO, and if we fail with TDRS and AGO, we'll see you at IOS at 6 plus 42.

SPACECRAFT Okay, we'll see you there and we're in the process of doing the annunciator and fire detector test.

CAPCOM Roger, Dan, we see that.

PAO This is Shuttle control, Hawaii has loss of signal, the TDRS testing may preclude voice communications from now until the Indian Ocean station in about 49 minutes. Although there is a possibility we could talk to Challenger through the Santiago, Chile station in 19 minutes. And there's always a possibility of some voice through TDRS while the testing is going on. At 5 days, 5 hours, 53 minutes, this is Shuttle control, Houston.

CAPCOM Challenger, Houston (garble)

SPACECRAFT Houston, you're loud and clear.

CAPCOM Roger, Dan, you're loud and clear as well.

SPACECRAFT Houston, Challenger, both the annunciator and . . .

CAPCOM Challenger, Houston, back with you on TDRS, and Dan you were cut out, can you repeat your last . . .

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t259j 247:12:26 09/04/83 PAGE 1

CAPCOM Challenger, Houston back with you on TDRS, and Dan you were cut out. Can you repeat your last.

SPACECRAFT Roger. I just let you know that we completed the annunciator light and fire detection test, and they both went good.

CAPCOM Roger, Dan, copy.

CAPCOM Challenger, Houston.

SPACECRAFT Yeah, go ahead, Houston.

CAPCOM Roger, Guy, your WCS vacuum valve's been closed for about 3 or 4 hours now, and we'd like to recommend that, that valve be opened, and we'll give you a call on closing.

SPACECRAFT Okay. We'll go ahead and open it.

PAO This is Shuttle Control, 5 days, 6 hrs, 41 min. mission elapsed time. Challenger about 20 sec away from the Indian Ocean Station.

CAPCOM Challenger, Houston with you through Indian Ocean for 5 min.

SPACECRAFT Howdy, Fish. Loud and clear.

CAPCOM Roger, Dan, loud and clear, you too.

CAPCOM Challenger, Houston.

SPACECRAFT Go ahead, Houston.

CAPCOM Roger, Dan. Over on the ...

END OF TAPE

CAPCOM Challenger, Houston

SPACECRAFT Go ahead, Houston

CAPCOM Roger, Dan, over on A7L we'd like you to take the strain gages to ON so we can warm up the MADS.

SPACECRAFT Okay, it's done.

CAPCOM Challenger, Houston, we're 30 seconds to LOS, see you next Hawaii at 7 plus 20.

SPACECRAFT Okay Bill, see you then.

PAO This is Shuttle Control, Challenger is out of range of the Indian Ocean station. Next acquisition will be thru Hawaii in 31-1/2 minutes. At 5 days, 6 hours 48 minutes mission elapsed time this is Shuttle Control Houston. This is Shuttle Control, 5 days, 7 hours, 20 minutes mission elapsed time, Hawaii is about to acquire Challenger.

CAPCOM Challenger, Houston with you at Hawaii for 2 minutes UHF.

SPACECRAFT Roger, Houston, loud and clear. We've just got through taking the tail glow photography and we're taking our notes and we'll be maneuvering them to EOIM attitude.

CAPCOM Roger, Richard we copy. And Challenger, Houston, we're 30 seconds LOS. We'll try to reacquire TDRS. If not, see you next AGO 7 plus 45.

SPACECRAFT Okay, Challenger copy.

PAO This is Shuttle Control, Hawaii has LOS. The crew reporting they had completed the tail glow photography, just prior to LOS here at Hawaii. The next tracking station is Santiago in 21-1/2 minutes. We may acquire on TDRS prior to that time, we'll stand by.

CAPCOM Challenger, Houston with you on TDRS, how copy.

SPACECRAFT Roger, copy loud and clear, and we've got the tail glow stuff done. We're a little bit surprised, the glow was on the opposite side of the tail from what we'd been briefed and had the procedures written for, but we rotated the flashing grading a 180 degrees and got a good zero image and first order image and proceeded with the test. Do you know how much you'd like to dump the supply water this evening?

CAPCOM Challenger, we copied Dan's message on the glow, you were cut out after that, repeat.

STS-8 AIR/GROUND TRANSCRIPT t260j 247:13:15 09/04/83 PAGE 2

SPACECRAFT Roger, I was just letting you know that the auto fuel cell purge has been . . .

CAPCOM Challenger, Houston, back on TDRS, how copy?

SPACECRAFT Read you loud and clear, how me?

CAPCOM Got you loud and clear this time, Richard, could you just repeat your last?

SPACECRAFT Okay, the fuel cell purg . . . is in progress, could I have the numbers for the supply water dump, and do we need another manual cabin repressurization and how about the IMU alignment?

CAPCOM Challenger, that information is on its way up to you, we're going to have a CAPCOM change from Fish 2 to Fish 1.

SPACECRAFT Great.

CAPCOM Challenger, Houston, we have your presleep activities when you're ready to copy.

SPACECRAFT Go ahead, CAPCOM.

CAPCOM Okay, on your supply water dump, you'll be dumping tank bravo to 30 percent. For your cryo heater configuration, 02 tank 3, heater A to auto . . .

END OF TAPE

SPACECRAFT Go ahead, CAPCOM.

CAPCOM Okay, on your supply water dump, you'll be dumping tank bravo to 30 percent. For your cryo heater configuration, O2 tank 3, heater A to auto. H2 tank 3 heater alpha and bravo, both of them to auto. And on your PCS clean up, we want to take the O2 N2 controller valve system 1 to open, system 2 to close, and that is to get the valves back in the correct configuration for the manual repress which will be done tomorrow. And finally, the vacuum vent valve in the WMS, take to close.

PAO CAPCOM on that transmission is Anna Fischer.

SPACECRAFT ... dump tank bravo to 30 percent, on the cryo it's O2 tank 3 alpha to auto, and H2 tank 3 alpha and bravo to auto, vacuum vent valve close, and on the PCS system, we'd like to move the, change the O2 N2's system 1 controller to open, system 2 controller to close, but that's in preparation for a manual repress tomorrow, and not one tonight. Is that correct?

CAPCOM That's correct Challenger, good readback, and we'll get back to you on the IMU.

SPACECRAFT Great, how are you doing, is it night or morning? I've lost track of what time it is in Houston!

CAPCOM It's 9:08 a.m. here.

SPACECRAFT Well, good morning!

CAPCOM Good morning to you! And Challenger, Houston, in answer to your question in IMU's, you can torque the values for stars 43 and 45 in the table. Go ahead. Challenger, Houston.

SPACECRAFT Houston, this is Challenger, how do you read?

CAPCOM We read you loud and clear.

SPACECRAFT Houston, Challenger, how do you read?

CAPCOM We read you loud and clear, Richard, how do you read?

SPACECRAFT Okay, we didn't hear you, did I under . . . stars 43 and 45 in the star table are ok to torque the platforms with?

CAPCOM That's affirmative, Richard.

SPACECRAFT Outstanding, ok, thanks a million.

STS-8 AIR/GROUND TRANSCRIPT t261j 247:14:06 09/04/83 PAGE 2

PAC This is Shuttle Control, 5 days, 7 hours, 45 minutes mission elapsed time. Challenger moving within range of the Santiago, Chile station.

CAPCOM Challenger, Houston, copy.

SPACECRAFT Roger, okay, in between Dan and me, looking out the window at the snow over the Andes, I think we've done everything you asked, we torqued the platforms, we got the PCS system switches set, vacuum vent valve is closed, the supply water dump should be in progress, and the cryo heaters have been thrown. So you might take a look at our configuration.

CAPCOM We copy, and configuration looks good to us.

SPACECRAFT Great, I'm assuming you don't need the IMU numbers.

CAPCOM We do not need the IMU numbers Richard, but we would like you to take the startrackers to track.

SPACECRAFT Oh dear, ok.

CAPCOM And Challenger, Houston, we would also like you to take the primary RJD's to off.

SPACECRAFT Roger, we're not completely through with the presleep activities, but we will get them, we also haven't changed LiOH, but we'll get it.

CAPCOM Okay, we copy, Richard.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t262j 247:14:22 09/04/83 PAGE 1

SPACECRAFT Roger, we're not completely through with the presleep activities, but we will get them. We also haven't changed the LiOH, but we'll get it.

CAPCOM Okay, we copy, Richard.

SPACECRAFT Okay, Houston. The trackers are off and have you heard any preliminary conclusions on the GPC?

CAPCOM Okay, Richard. We copy and we don't have any information right now, but we'll have it before you go to sleep.

SPACECRAFT Super, okay. Well, we'll, yeah, I'd like to ... whatever things you think are going to be going on ...

CAPCOM Challenger, Houston. With you through TDRS. We lost you there for a minute, could you repeat your last, Richard?

CAPCOM Challenger, Houston with you through TDRS. How do you copy?

SPACECRAFT Roger, Houston. Richard's downstairs now, and he hasn't called you recently.

CAPCOM Roger.

SPACECRAFT Mustn't have been very important.

CAPCOM Okay. And in answer to your question for the GPC problem. What we think we'll be doing tomorrow is that we will be putting string 4 on GPC 1 and string 1 on GPC 4, but we'll get back with you on the final answer on that a little later.

SPACECRAFT Okay, fine, thank you.

CAPCOM And Challenger, Houston, when one of you has a few spare moments to help us troubleshoot the problem you had with the resume, could we have one of you give a short narrative of your steps and observations from the time you did the OPS mode recall.

SPACECRAFT Okay, Anna, this is Dale. Let me see if I can reconstruct it. We had don't know what was up on CRT2, but I'm pretty sure it was not, we're pretty sure it was not spec 0. On CRT 1, Richard had put up system summary 1 so that when he did the OPS mode recall, we could see all the M's go away to insure that the GPC2 had picked up all the strings. He did the OPS 201 throw, and I looked away, but Richard said that it occurred. He saw the M's go away in system summary 1, but when I looked back, I saw spec 0 on both CRT 1 and CRT 2. And we talked it over a little bit, couldn't understand why that was the case since all we had done was restrung. So Richard did a resume to CRT1 and

STS-8 AIR/GROUND TRANSCRIPT t262j 247:14:22 09/04/83 PAGE 2

nothing happened. And at that point, we decided to keep our hands off the keyboard because we weren't sure what the GPC's were doing, and after 3 or 4 minutes, just before we came AOS at, I think it was Hawaii, Richard tried a resume again, and universal pointing came off. And from that point on, everything was nominal.

CAPCOM Okay, we copy, thank you.

CAPCOM Challenger, Houston. Go ahead.

SPACECRAFT (garble) clear and loud and clear, one of the things that is unusual about it as compared to the other modes, though, is when you lock up and when you break lock, there is absolutely no indication on the air waves that anything has changed about the comms. So onboard, sometimes it's total silence and we think you're there and you've broken lock, or vice versa is true. We've been LOS and you come AOS and if you haven't made a call, we don't know it. It's not a big thing just a characteristic of the system that's a little bit different than the S-band and particularly the UHF.

CAPCOM We copy, thank you.

SPACECRAFT Okie doke.

CAPCOM Challenger, Houston. We are 2 minutes to TDRS LOS, and we'll see you again at Guam at 8 plus 41.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t263j 247:14:34 09/04/83 PAGE 1

CAPCOM Challenger, Houston. We are 2 minutes to TDRS LOS, and we'll see you again at Guam at 8 plus 41.

SPACECRAFT Okie doke. We'll see you there.

SPACECRAFT We're all eating our supper, and looking out the window and just talking about space flight.

CAPCOM Sounds like fun.

PAO This is Shuttle Control. We've had loss of signal through TDRS. Next acquisition through Guam in 27 and a half minutes, at 5 days, 8 hours, 14 minutes, mission elapsed time, this is Shuttle Control, Houston.

PAO This is Shuttle Control, 5 days, 8 hours, 41 minutes, mission elapsed time. Challenger coming up on acquisition through Guam.

CAPCOM Challenger, Houston, we're with you through Guam for 5 minutes.

CAPCOM Challenger, Houston, we're with you through Guam for 5 minutes.

CAPCOM Challenger, Houston, with you through Guam for 4 minutes.

SPACECRAFT Roger, Houston, we're reading you loud and clear. We have to change the batteries down here. We'll be right with you.

CAPCOM Roger.

SPACECRAFT Houston, CDR.

CAPCOM Challenger, Houston. Go ahead.

SPACECRAFT Roger, I just terminated the water dump, and I apparently I made a mistake in setting the parameter because I dumped too much water out of the tank bravo which indicated about 9%. It was my mistake, but I guess you're going to have to recalculate your water management based on that and my apologies.

CAPCOM We copy.

SPACECRAFT And Houston, CDR. Radio check on the other speaker, how do you read?

CAPCOM We read you loud and clear. How read?

SPACECRAFT Loud and clear here also.

CAPCOM Challenger, Houston, we are 30 sec till LOS. We will attempt TDRS and if not we will see you at Santiago at 9 plus 19.

SPACECRAFT Nine plus 19 at Santiago. Santiago if we don't hook up with the TDRS. Okay. See you there.

PAO This is Shuttle Control. Guam has LOS. TDRS AOS in 10 min 20 sec. If that is unsuccessful, the next station is Santiago in 31 and a half minutes. At 5 days, 8 hours, 48 minutes mission elapsed time, this is Shuttle Control, Houston.

PAO This is Shuttle Control, 5 days, 8 hours, 59 minutes mission elapsed time. We have TDRS AOS.

CAPCOM Houston with you through TDRS.

SPACECRAFT You were kind of weak, say again please.

CAPCOM Yes, Richard, we were just telling you we're with you through TDRS, and we have 4 questions in regards to the problem with the resume key when you get a chance.

SPACECRAFT I'm sorry, you were too weak. Say again one more time please.

CAPCOM Okay. We have 4 questions in regards to your problem with the resume key when you have time to answer.

SPACECRAFT Okay, we're all ... Houston, Challenger, we're ready to take your questions. Go ahead.

CAPCOM Okay. The first question is, were both resumes done from the same keyboard?

SPACECRAFT That's affirmative. On keyboard number 1.

CAPCOM Okay. We copy. Second question is did the major mode display appear on both CRT's 1 and 2?

SPACECRAFT Is affirmative.

CAPCOM We copy, and third question is what GPC's were assigned to CRT's 1 and 2?

SPACECRAFT Okay. GPC 1 was assigned to CRT 1 and GPC 2 was assigned to CRT 2.

CAPCOM We copy and the final question is what were the positions of the major function switches for CRT's 1 and 2?

SPACECRAFT They were both in GNC.

STS-8 AIR/GROUND TRANSCRIPT t263j 247:14:34 09/04/83 PAGE 3

CAPCOM We copy, thank you very much.

END OF TAPE

SPACECRAFT ... they were both in GNC.

CAPCOM We copy, thank you very much.

SPACECRAFT Houston, CDR.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT Houston, CDR.

CAPCOM Challenger, Houston, go ahead. We lost you there for a few minutes Dick.

SPACECRAFT Okay. Would you repeat question number 2 again please?

CAPCOM Okay. Question number 2 was, did major mode display appear on both CRT's?

SPACECRAFT We're not sure that we understand at what point you're asking, over.

CAPCOM Standby. After the second resume.

SPACECRAFT Oh, okay. Let me go through the sequence. The first resume was a request to resume a system summary display from CRT 1, and it did nothing, pardon me, GNC SPEC 0 was sitting on both CRT's 1 and 2. The first resume was a request to resume SPEC 0 from CRT 1, and it was unsuccessful even though the resume word appeared on the scratch pad line. We thought, at that time, that the computers were hung, that the computer was hung up in some fashion that we did not understand. Several minutes went by and I attempted a second resume on CRT number 1, and that resume worked. And then I attempted a similar resume on CRT 2 and that resume worked, and from that moment until this things have worked nominally.

CAPCOM We copy, thank you very much Dick.

SPACECRAFT You bet.

PAO This is Shuttle Control. The questions concerning the GPC's relate to the redundant set split which occurred 6 or 7 hours ago. The computer experts on the ground are looking over the dump tape - telemetry from that, and are troubleshooting what the cause may be, and required some more information from the crew. Dick Truly went through a malfunction procedure and restored that computer and has been working fine since. We'll continue to stand by on TDRS.

CAPCOM Challenger, Houston, we have some more info up for you on the GPC 1 problem when you're ready to copy.

SPACECRAFT Roger, go ahead.

CAPCOM Okay Richard, the best information we have now is that it's a hardware problem, which caused a 1-bit error which resulted in the GPC byte message resulting in the ultimate fail-to-sync. We think it's a one-time occurrence, and if GPC 1 continues to behave we will use it as planned for entry tomorrow with string 4, and we will have some more information for you on the nightly system summary.

CAPCOM Challenger, Houston.

SPACECRAFT Houston, Anna, do you want the DSO reports?

CAPCOM Yes we do.

SPACECRAFT Okay, we continued on mission day 5 the fluid collections processes. We worked with some equipment from MIT, the palamometer. Also, monitored overnight ambulatory recording COG's heart rate, blood pressure, etc. We did leg photos on the crew, also did leg volumes with the stockings on the crew. Did a bit of tissue tronometry and did some impedance studies, and the times on those for, is 05:01:00 ...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t265j 247:15:45 9/04/83 PAGE 1

SPACECRAFT ... and did some impedance studies, and the times those four is 05 01 00, that's 5 days, 01 hrs, 00 min to 01 hrs 15 min. There were some rather lengthy and extensive studies prior to that, on thresholds and ZOR 's wrap were both angular and linear. And I think that about wraps up what we did, other than packing up things to come home.

SPACECRAFT Oh, one other thing. We did photo document all of the things that we've been doing today on both motion pictures and still.

CAPCOM We copy you, Bill. Do you have the status on the animals?

SPACECRAFT Yes, they seem to have adapted to weightlessness surprisingly well and scurrying around the cages in a pretty skillful fashion. It was quite different from when they first appeared. And they remained surprisingly clean, healthy, every one of them. And show all signs of good health. They are maintaining their grooming. Very active, frankly I was rather surprised at the appearance of them. As far as I can tell, they are in extremely good condition. They still have some potato left but it's good that we're coming home tomorrow, I guess. There's adequate food for them, though.

CAPCOM Okay, we copy.

CAPCOM Challenger, Houston. We're with you through Santiago for 4 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM And Challenger, Houston, we'd like you to check teleprinter message number 45.

SPACECRAFT Houston, CDR. There's no message at all in the teleprinter, over.

CAPCOM Challenger, Houston, that's one of the messages that came up first thing this morning when you woke up.

SPACECRAFT Okay, say again the number.

CAPCOM 4 - 5

SPACECRAFT And Houston, while I'm looking for that teleprinter message, I understand Franklin was down in Santiago. And we've been watching the local country side from straight above. As a matter of fact, right now we are looking down at the snow. And just thought we'd wish him down there - wish everybody down there, a good word for the great work that has been done.

STS-8 AIR/GROUND TRANSCRIPT t265j 247:15:45 9/04/83 PAGE 2

CAPCOM Roger, we copy and forget message 45.

SPACECRAFT Okay.

CAPCOM And Challenger, we're with you through TDRS.

CAPCOM Challenger, Houston.

SPACECRAFT Houston, Challenger, did you call?

CAPCOM Yes, we just want to let you know, we're about 8 minutes from TDRS LOS. Your configuration for sleep looks good to us here on the ground and since this is the last shift that you will be working with the crystal team, on behalf of all us here at Mission Control, we'd like to congratulate you all on another outstanding day and a superb mission overall. Would like to tell you to get a good night's sleep and we're all looking forward to the Shuttle's first night landing tomorrow.

SPACECRAFT Roger, Houston, and we'd like to say goodnight to the crystal team too. We've been working with you for a long time before the flight and during the flight it has been our pleasure, and we're also looking forward to the night landing. So we'll see you tomorrow.

CAPCOM Okay. Roger.

SPACECRAFT Good night.

CAPCOM Good night.

PAO This is Shuttle Control. The crew rest period has begun. Still 6 minutes left TDRS acquisition on this orbit. Challenger has just started orbit number 88. We don't expect to talk to the crew again having said good night to them, but we'll standby and see if there is any more air-to-ground during this next 5 and a half minutes. A shift handover ...

END OF TAPE

PAO This orbit, Challenger, has just started orbit number 88. We don't expect to talk to the crew again having said good night to them, but we'll standby and see if there is any more air-to-ground during this next 5 and a half minutes. A shift handover in Mission Control will take place at noon, Central Daylight Time. And Flight Director, Harold Draughon, will have his change-of-shift briefing at 12:30 p.m., Central Daylight Time in room 135 at the JSC news center. The change-of-shift briefing with Flight Director, Harold Draughon, at 12:30 p.m. Central Daylight Time at 5 days, 9 hrs, 44 min, mission elapsed time, this is Shuttle Control, Houston.

PAO This is Shuttle Mission Control, at 5 days, 10 hrs, 24 min, mission elapsed time, handover in Mission Control Center has occurred and Flight Director, Jay Greene, and the planning team have relieved Flight Director, Harold Draughon, and his team. That, of course, represents the final shift of Harold Draughon's team, and they are exhibiting great sense of release and relief in having fulfilled their portion of this mission. Challenger on orbit 88, just completed a pass over Guam. We're about 55 minutes into the sleep period, but the downlink indicates a couple of CRT's, cathode ray tube displays are still on. The pilot and commanders CRT's and one of the panels at the aft crew station are apparently are still turned on indicating that the crew hasn't gone to sleep yet. We'll have a LOS of a little over 20 minutes and get another look at some of the downlink to get some idea of when the crew begins to wind down for the evening. At mission elapsed time 5 days, 10 hrs, 25 min, this is Mission Control, Houston.

PAO This is Mission Control, Houston at 5 days, 10 hrs, 50 min, mission elapsed time. We're taking data through the TDRS system presently, and downlink shows the cathode ray tubes to be configured, or to have been commanded to off position, they're in the sleep configuration. Challenger on orbit 88, just approaching the west coast of South America. This is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 11 hrs, 50 min. We just picked up data through Guam on orbit 89.

END OF TAPE

PAO This is Mission Control, Houston, at 5 days, 11 hrs, 50 min. We just picked up data through Guam on orbit 89. And getting reassurance here in the control center that vehicle systems are untroubled and within nominal constraints. Data shows orbital parameters of 116 by 118 nautical miles. And that the crew is spending its last night in space apparently placid and uninterrupted. There are 5 and a half hours remaining in the sleep period. This is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 12 hrs, 51 min, mission elapsed time. We've just completed a pass over Dakar on orbit 90. Everything remains quiet onboard the vehicle. Cabin temperature shown to be 78 degrees and steady humidity 27 percent. No record of a caution and warning alarms having occurred during any LOS period. The crew's last night in space has been apparently restful and uninterrupted so far. This is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 12 hrs, 53 min, mission elapsed time. There apparently was a burst of interference on UHF which apparently was transmitted over the air-to-ground loop and was audible here in the Mission Control Center. The ground control network officer traced it down to just a spurious UHF RFI or radio frequency interference, which was local at the Dakar site where the orbiter just passed. The G&C officer verified that it did not go up to the crew. This is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 13 hrs, 55 min, mission elapsed time. We're in the middle of a fairly long LOS period presently. We don't acquire for another 22 minutes when we encounter Dakar. Challenger is on orbit 91 over the South Pacific presently. As a note to news media representatives, the scheduled 8:30 change-of-shift briefing with Flight Director Jay Greene will occur as scheduled. There will be no circumstances in which we cancel that. And any media representatives or network researchers or anyone who has, or plans to have questions or inquires about entry day activities should be advised that this will be their last opportunity to get their hands on a real live Flight Director and get those questions into a reliable source. Past experiences have shown that a lot of people run around with questions one or two hours before landing which is the worst possible trying to get them answered and be well advised to prepare those questions early and get them into the Flight Director at tonight's briefing. Again, that briefing will occur as scheduled at 8:30 p.m. Mission elapsed time 5 days, 13 hrs, 56 min, this is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 14 hrs, 24 min, mission elapsed time. We've just had a pass over the Dakar tracking station and picked up data for the first time

STS-8 AIR/GROUND TRANSCRIPT t267j 247:17:25 09/04/83 PAGE 2

for almost an hour. And systems onboard the vehicle continue to look good. We have now shifted over to TDRS and continue to track through the satellite system ...

END OF TAPE

PAO ...in almost an hour and systems onboard the vehicle continue to look good. We've now shifted over to TDRS and are continuing to track through the satellite system. The Mission Control team is presently reviewing some messages for accuracy and clarity before they're uplinked to the crew. These messages will constitute part of the flight day 7 execute package that will be uplinked to the crew advising them of changes in the timelines and execute preparations in advance of deorbit and entry activities tomorrow. Just about 3 hours, a little more than 3 hours, remain in the crew's sleep period presently. Challenger right now is on orbit number 91 just over the heart of North Africa. Mission elapsed time 5 days, 14 hrs, 26 min, this is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 15 hrs, 35 min, mission elapsed time. Challenger on orbit 92, just on an ascending node coming up toward Latin American just off the west coast of South America. Right now crossing the equator at an altitude of 118 nautical miles. We're in the middle of another fairly long LOS period. We don't acquire again for another 17 minutes through Dakar, but there have been a number of TDRS tapes during the LOS periods. And the Mission Control team has had frequent opportunities to look at the downlink data. An hour and 53 minutes remaining in the crew's sleep period. This is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 16 hrs, 37 min, mission elapsed time. Just about an hour remaining in the Shuttle's, in the crew's sleep period. Challenger is on orbit 72 just acquired by the ground station at Orroval Valley, and controllers didn't look at the data. It's a very brief pass of just over a minute and a maximum elevation of 9 degrees over the horizon. And data indicates that all the onboard systems are healthy and there has been no caution or warning alarms at any time during the night. Flight control team continuing to draft an execute package and prepare it for the onboard teleprinter to advise the crew of changes in their activity schedules in preparation for entry and landing tomorrow. At mission elapsed time 5 days, 16 hrs, 38 minutes, this is Mission Control, Houston.

PAO This is Mission Control, Houston, at 5 days, 16 hrs, 58 min, mission elapsed time. It's about 31 minutes remaining in the crew's sleep period. Nevertheless, CRT number 1 is turned on. Challenger is on orbit number 93 right over the South Pacific presently. That they were acquiring K-band data through the TDRS system, and were able to look at the downlink telemetry showing that the CRT number 1 is turned on. That's cathode ray tube positioned directly in front of the Commander's seat

END OF TAPE

PAO . . . South Pacific presently, that they were acquiring K-band data thru the TDRS system and able to look at the downlink telemetry showing that CRT number 1 is turned on, that is the cathode ray tube position directly in front of the commander's seat, so presumably at least Richard Truly is awake onboard Challenger, as a reminder to repeat the earlier advisory, the 8:30 Change-of-Shift Briefing with Flight Director Jay Greene will be held as scheduled and this will be the last time that the Flight Director will be available to the media before entry tomorrow morning, so any reporters or network researchers who have entry questions, should take this opportunity to get their answers because it is going to be come increasingly difficult to find sources as entry time approaches, so the time is now to get your questions answered and certainly not later. That Change-of-Shift Briefing will occur on time at 8:30 pm Central Time in Building 2, room 135, we have 30 minutes remaining in the crew's sleep period and although we have communications capability through the TDRS and although mission Commander Richard Truly is apparently awake, there are no plans to communicate with the crew until the sleep period has officially ended.

Wake up music

CAPCOM Good morning Challenger!

SPACECRAFT Good morning, you've got everybody marching around up here!

CAPCOM Well, welcome to entry day, we're going to be proud to have you down here on a national holiday today.

SPACECRAFT Well, thank you, we're looking forward to it.

CAPCOM And Richard, we've got about 30 seconds to go this pass, we'll have a couple of notes for you at Indian Ocean, we'd like you to take a look at the CAP update, you notice we've done a couple of things early this morning, and get started on those as soon as you can.

SPACECRAFT Sure.

CAPCOM See you at Indian Ocean at 17 plus 46.

SPACECRAFT Wilco, see you there.

CAPCOM And Challenger, Houston, we're with you now on TDRS.

SPACECRAFT Roger that.

END OF TAPE

CAPCOM TDRS.

SPACECRAFT Roger that.

PAO This is Mission Control Houston at 5 days, 17 hours, 33 minutes mission elapsed...

SPACECRAFT If you've got those notes handy this would be a good time to pass them up.

CAPCOM Okay. First of all on the manual cabin atmosphere management we'd like you to repress with nitrogen only per the Orbit OPS Checklist page 5-10, just like yesterday and the day before, but there's a change on panel L2, O2/N2 controller valve, system 1 closed, system 2 opened. Rationale is that we did not receive data yesterday when this procedure was performed. If possible we'd like to perform this procedure during a data pass and we have good data now. Second thing on panel R1, cryo O2 tank 3, heater alpha to off, cryo H2 tank 3, heaters alpha and bravo 2 to off. And finally, we'd like for you to clear the star table this morning to, in order to gather current stars. A possibility we may get star of opportunity IMU align.

SPACECRAFT Roger, the cryo is done, the star table is clear and I'm looking at the manual repress to see if I have any questions.

CAPCOM Okay.

PAO This is Mission Control Houston at mission elapsed time of 5 days, 17 hours, 35 minutes. The wakeup call this morning was John Phillip Sousa's Simper Fildelis, as performed by the Marine Corp band, significant in that the CAPCOM, Brian O'Connor is a Marine Corp officer. And at the wakeup call three of the cathode ray tubes were activated and it was clear that the crew was up and around well in advance of the wakeup call this morning. We still have acquisition through TDRS. This is Mission Control Houston.

CAPCOM Challenger, Houston, sounds like maybe stuck mike. Challenger, Houston, check for stuck mike. Challenger, Houston with you on TDRS again, how do you read?

SPACECRAFT Roger, loud and clear, Brian, and your last transmission if you continued it was cut out.

CAPCOM Roger, all I said was, check for stuck mike. We were getting a noisy downlink.

SPACECRAFT Okay. Houston, Challenger.

CAPCOM Go ahead. Go ahead, Challenger.

STS-8 AIR/GROUND TRANSCRIPT t270j 248:00:05 09/05/83 Page 2

PAO This is Mission Control Houston, Flight Director Gary Coen and his Entry Team of Flight Controllers have begun to arrive in the Control Center and are tagging up with their counterparts in preparation for the handover scheduled for 8:00. And again we do intend to conduct the change-of-shift briefing with Flight Director Jay Greene and encourage media representatives that work researchers to attend and get their entry day questions answered now, early on, since it's going to be increasingly difficult to take the time to run down data and sources as entry approaches. Again that change of shift briefing is expected to occur on time at 8:30 p.m. Central Time in room 135 in the Johnson Space Center Newsroom. Mission elapsed time, 5 days, 17 hours, 42 minutes, this is Mission Control Houston.

END OF TAPE

SPACECRAFT ...the heaters alpha...

PAO Take the time to run down data and sources as entry approaches. Again that change-of-shift briefing is expected to occur on time at 8:30 p.m. central time in room 135 in the Johnson Space Center newsroom. Mission Elapsed Time 5 days 17 hours 42 minutes, this is Mission Control Houston.

CAPCOM Challenger, Houston with you over Indian Ocean for 6 and a half minutes. Standing by.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM Read you the same. Challenger, Houston, we've just lost S-band data, how do you read on UHF?

SPACECRAFT Loud and clear Brian.

CAPCOM Roger, you the same. And Challenger, Houston, we've got S-band data back.

SPACECRAFT Okay.

CAPCOM Challenger, Houston, 10 seconds to LOS, we'll see you at Yarragadee at 18 + 02.

SPACECRAFT Okay, 9 minutes at Yarragadee.

CAPCOM Challenger, Houston, standing by at Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM Read you the same.

SPACECRAFT Houston, CDR.

CAPCOM Go ahead.

SPACECRAFT Roger, I guess you all don't have data here but the manual repress is complete within 2 and I'm not looking at the page number but I did have one question in the deorbit prep. When we set up the DPS config for deorbit prep, I was a little surprised in addition to swapping strings between 1 and 4 that you also didn't swap the other things like CRTs and so forth.

CAPCOM Stand by. Challenger, Houston. Richard, in answer to your question about restringing.

SPACECRAFT Go ahead.

STS-8 AIR/GROUND TRANSCRIPT t271j 248:00:14 09/05/83 PAGE 2

CAPCOM Roger, we think it would be reasonable to put CRT 1 on GPC 4 if you'd like to do that. Also, we were going to talk to you later about this, but in the same light, we think it would be prudent to assign the downlister to GPC 2.

SPACECRAFT Okay, I agree it would be easier for me to remember just if we swap the ones and fours and I'd prefer to do that and having the downlist on number 2 if that's what you'd like as your comm.

CAPCOM Roger, concur. And just a note, last time that we spoke, sounded like we got a lot of noise when Dale tried to talk. I'm not sure if he's got a problem with his keyset or not.

SPACECRAFT Negative. He was using the same one that I had been using and probably there was just something going on in the background.

CAPCOM Roger, the last few transmissions have been fine, no noise at all. And we're about to go LOS, we'll see you next at Orroral in about 2 minutes, 18 + 11.

SPACECRAFT Roger, that. See you there.

CAPCOM Challenger, Houston, with you at Orroral for 2 minutes.

SPACECRAFT Roger that, Brian, loud and clear.

CAPCOM Read you the same and we're standing by.

SPACECRAFT Okiedoke.

CAPCOM Challenger, Houston, we're going LOS, we'll see you next at TDRS at 18 + 25 and if that doesn't work, we'll see you over the states at 18 + 46.

SPACECRAFT Okay, TDRS or the states, see you Brian.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t272j 248:00:43 9/05/83 PAGE 1

CAPCOM Challenger, Houston, we're going LOS, we'll see you next at TDRS at 18 + 25, if that doesn't work, we'll see you over the States at 18 + 46.

SPACECRAFT Okay, TDRS or the States, see you Brian.

PAO Mission Control Houston. Loss of signal at Orroral. Next station on the ground in 32 minutes will be Merritt Island launch area or Mila ground station, unless we do have TDRS lockup. And that's approximately 11 minutes away. Challenger now on -- nearing the end of orbit 93. The crew beginning to do the final stowage and preparation for landing tomorrow morning at Edwards Air Force Base. And some 4 hours prior to entry, they will switch from the crew activity plan in the flight data file to the deorbit prep handbook, from that to the entry checklist. At 5 days, 18 hours, 15 minutes, this is Mission Control Houston.

CAPCOM Challenger, Houston, with you TDRS for 51 minutes.

SPACECRAFT Roger, Houston and we need to discuss IMUs.

CAPCOM Roger, go ahead.

SPACECRAFT Okay at a time of 18:19, we got a BCE string 2 IMU, we deselected the IMU, tried an I/O reset, and no-joy, went to the MAL in the malfunction procedure page 5-23, started in block 21, we went to block 22, 23, 24, 25, standby. 24, 26, 30, 32, and 35, in other words, we cycled power on the MDM, looked at the other 4, and it looks like the IMU 2 is down.

CAPCOM Roger, we're looking at the data.

SPACECRAFT Okay and if you'd like to retry any of that while you have data, Brian, I'll be glad to. I wanted to go as far as I could before AOS just to give you as much headstart as I could.

CAPCOM Okay sir, we'll get back to you as soon as we can.

SPACECRAFT Okay, and Brian, Guy says to pass on that the Sun shields opened up nominally at 18:25.

CAPCOM Roger, good news.

SPACECRAFT And Houston, CDR. We're going to delay stowing the Ku-band while you're AOS TDRS.

CAPCOM Roger. Challenger, Houston, we'll probably go LOS for a few seconds while we switch over to Ku.

SPACECRAFT Roger.

STS-8 AIR/GROUND TRANSCRIPT t272j 248:00:43 9/05/83 PAGE 2

CAPCOM Challenger, Houston, with you on Ku-band.

SPACECRAFT Roger, read you loud and clear.

CAPCOM Read you the same and if you don't have anything else for us, the Planning shift is going to sign off, hand over to the Entry Team, we wish you a good entry this morning.

SPACECRAFT Thank you, Brian, and thank that whole team. You guys have done a super mission for us, see you later.

CAPCOM Roger, good luck. Challenger, Houston, the Entry Team's with you and we have a question, reference your IMU 2 alignment.

SPACECRAFT Roger, John, go ahead.

CAPCOM Roger, Richard, if you could just check SPEC 21 and make sure maybe you didn't inadvertantly put IMU 2 into standby?

SPACECRAFT The, when I first looked -- well first of all, the switch was not bumped, IMU 2 switch is on, I checked it on, and it's still on. When I first looked at SPEC 21, I had a missing and a standby indication. I tried an I/O reset, and there was no-joy, we cycled power, tried an I/O reset and at that time there was...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t273j 248:01:43 09/05/83 PAGE 1

SPACECRAFT was not bumped. IMU 2 switch is on. I checked it on and it's still on. When I first looked at SPEC 21, I had a missing and a standby indication. I tried an I/O reset and there was no joy. We cycled power, tried an I/O reset and at that time, there was no joy and it was still in standby. I see now that it is back in operate so I'm assuming that the power cycle on the MDM is what cured it.

CAPCOM Roger, we copy Richard.

SPACECRAFT And the IMU was deselected for the procedure.

CAPCOM Roger, we copy Richard.

SPACECRAFT Does that answer your question, or am I going around it?

CAPCOM No that's good, we'll see if GNC has another fault for you.

SPACECRAFT Okay, if I'm reading my data right now, looking at SPEC 21, IMU is back in operate and all we'd have to do would be to reselect it to get it back. I've got data on it. And Houston, CDR. I was hasty in saying how good the IMU is obviously, the angles that -- I was looking at the delta X,Y and Z and not the angles. It looks like it may have caged itself and may need an IMU-to-IMU alignment.

CAPCOM Roger. Okay, Richard, here is another question from GNC. At the time IMU 2 went down, we'd like to know if SPEC 21 was called up and were you in the process of selecting an IMU for alignment?

SPACECRAFT Negative, as a matter of fact, I was shaving at the time. We got the message and then I called up SPEC 21 after we got the message to check it and when I called it up, it was in standby.

CAPCOM Roger, we copy. Thank you, Richard. And Richard, we would like you to go ahead and do an IMU-to-IMU align using IMU no. 3 as the good IMU, and align IMU 1 and 2 to 3 and then stop and let us look at the data.

SPACECRAFT Okay, I concur. We'll align 1 and 2 using 3 as - -

CAPCOM And, Richard, I copied align 1 and 2 using.

SPACECRAFT Roger, I understand, if I understand you right, we will align IMU's 1 and 2 using IMU 3 as a reference.

CAPCOM Roger that, Richard

STS-8 AIR/GROUND TRANSCRIPT t273j 248:01:43 09/05/83 PAGE 2

SPACECRAFT Okay, the align's in progress, the torque time was 18 plus 41 plus 10.

CAPCOM Roger, copy your torque time, Richard. And Challenger, Houston, if you need some more time to do the IMU align here, we can go ahead and delete the TDRS test maneuver. Your call.

SPACECRAFT Stand by one, I was just going to look at the update and see what our planned schedule was. Okay, Houston, I've done all I can do on the IMU-to-IMU align, now as a matter of fact, it just completed so the IMU-to-IMU align is complete. I see we -- and of course that wiped any stars in the table. I'm assuming what you want us to do now is right away per your update is just go ahead and maneuver it and do this scheduled IMU align with stars 22 and 52. Correct?

CAPCOM Stand by one, Richard.

SPACECRAFT Okay, the maneuver time is right now so we need to decide to either go ahead and do it or not.

CAPCOM Roger Richard, go ahead and maneuver to the IMU align attitude.

SPACECRAFT I agree. Okay Houston, the maneuver is in progress and the star tracker's in track mode.

CAPCOM Roger, we copy Richard.

SPACECRAFT John, I don't know, I've given you about all the data that I have. It looked to me like the IMU may have just taken a power hit, a transient power hit, and recovered, but I don't know.

CAPCOM Roger, we copy Richard. Richard, we think that is a possibility. We're going to do a playback and take a look at it.

SPACECRAFT Okeidoke, just let me know and we'll press on.

CAPCOM Yes sir.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t274j 248:01:20 09/05/83 PAGE 1

CAPCOM Roger, we copy Richard. Richard, we think that is a possibility, we're going to do a playback and take a look at it.

SPACECRAFT Okiedoke, just let me know and we'll press on.

CAPCOM Yes, sir. Challenger, Houston, you can go ahead and align per the procedure and the CAP but don't put 2 back in until we call you.

SPACECRAFT I understand, concur. And Houston, CDR. I was a little late but the highload duct heater is on.

CAPCOM Roger, copy Richard.

SPACECRAFT And we picked up a couple of stars that are in the table now.

CAPCOM Roger.

PAO Mission Control Houston. Change of shift briefing will start in about 4 minutes in the JSC briefing room, room 135 building 2, with off-going Flight Director Jay Greene. 4 minutes.

SPACECRAFT Okay, Houston, star trackers did it again, 22 and 52 are in the table.

CAPCOM Roger, we copy Richard.

SPACECRAFT Okay, Houston, I'm going to torque at 18 + 56.

CAPCOM Roger, we're a go and we like your stars.

SPACECRAFT Okay, Houston the star align is complete and as far as I'm concerned, it's your call on this TDRS test, if you want us to go ahead and maneuver it to that attitude now, we're on the way, your call.

CAPCOM Roger, stand by one Richard.

SPACECRAFT Okay.

CAPCOM Challenger, Houston, you're go. Stand by one Richard...

SPACECRAFT Houston, CDR, you were cut off, say again.

CAPCOM Roger, Richard I was starting to tell you something and then I had to stop. Stand by one and I'll get back to you.

SPACECRAFT Oaky. Okay, no problem.

STS-8 AIR/GROUND TRANSCRIPT t274j 248:01:20 09/05/83 PAGE 2

CAPCOM Challenger, Houston, we showed that IMU 3 was not selected for the alignment and we would like you to redo the star alignment with all three IMUs.

SPACECRAFT Oh, shoot, you're right, and I'll do it, stand by. Okay the stars are back in the table, looks like a better alignment this time anyway and sorry about that and I'll go ahead and retorque it in just a second.

CAPCOM Roger that, Richard and you're go for torque.

SPACECRAFT Okay, Houston, the align is complete. Tell GNC I owe him one and now it's your call on the TDRS attitude.

CAPCOM Roger, that. Challenger, Houston, you're go for the TDRS test attitude.

SPACECRAFT Wilco. Okay Houston, the maneuver's in progress and now it's your call on the stowing of the Ku-band.

CAPCOM Roger, we copy Richard. And Challenger, Houston, if you could put the star trackers back in track so we can get a data place.

SPACECRAFT Okay, how's that?

CAPCOM Challenger, Houston, you are go for EOIM deactivation.

SPACECRAFT Okay, Dan, copy thank you.

CAPCOM Challenger, Houston, IMU 2 behavior looks very good to us now, you can reselect it and just for your information in about 5 minutes we intend to give you a go to stow the Ku-band.

SPACECRAFT Thought you might say that, the payload bay lights are on and the cameras are all aimed to record it on VTR.

CAPCOM Roger, super Dale.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t275j 248:01:31 09/05/83 PAGE 1

SPACECRAFT Thought you might say that. The payload bay lights are on and the cameras are all aimed to record it on VTR.

CAPCOM Roger, super Dale. Challenger, Houston, we're not certain the first part of our last transmission was sent up to you. Just confirm for us that you copied to reselect IMU 2

SPACECRAFT Negative, we did not receive that, but we did now and we'll reselect IMU 2.

CAPCOM Roger that.

SPACECRAFT Okay, she's stuck in, John.

CAPCOM Roger that Richard, thanks. Challenger, Houston, we're going LOS TDRS in 1 minute, you are GO to stow the Ku-band in 3 minutes from now and don't stow it until 3 minutes from now. We will see you at Indian Ocean at 19 + 20, in 5 minutes.

SPACECRAFT Roger, understand, we'll stow the Ku-band after LOS. Thank you.

CAPCOM Roger. Challenger, Houston's with you at Indian Ocean for 6 minutes.

SPACECRAFT Roger, Houston, read you loud and clear and we're in the midst of Ku-band antennas down.

CAPCOM Roger, we copy, Guy.

SPACECRAFT Houston, CDR. Do you perhaps have an approximate TIG time?

CAPCOM Roger that Richard. Richard, the approximate, deorbit TIG time is 6 days, 00:15:30.

SPACECRAFT Okedoke, thanks a million, we appreciate it.

CAPCOM Roger that. Challenger, Houston, we show that antenna is stowed, thanks very much and I have a note for you here when you're ready to copy, reference your upcoming thermal test.

SPACECRAFT We're ready, Houston.

CAPCOM Roger, Guy, during the Sun shield opening our data showed that the restraint index insert switch on panel L12 was in the inhibit position, and as a result we recommend that when you do the first PAM ASE thermal test in about, about right now -- in about 5 minutes, that you make sure that the restraint index insert switch is off before you do the SCA powerdown

STS-8 AIR/GROUND TRANSCRIPT t275j 248:01:31 09/05/83 PAGE 2

SPACECRAFT Roger that's a (garble), thank you John.

CAPCOM Roger that, Guy. Challenger, Houston, we're going LOS here in 20 seconds, see you at Yarragadee at 19 + 35.

SPACECRAFT Roger, Houston, we'll see you there.

PAO Mission Control Houston, loss of signal at Indian Ocean station. The Ku-band antenna on Challenger has been rotated aboard and into its stowed position for the duration of the flight. The crew proceeding with their preentry checklist stowage and the next station to acquire in about 6 1/2 minutes will be Yarragadee, Australia. On orbit 94, at 5 days, 19 hours, 29 minutes elapsed time, Mission Control Houston.

CAPCOM Challenger, Houston's with you at Yarragadee for 7 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM And when you have a moment Richard, I have two little flight notes for you.

SPACECRAFT And Houston, CDR. Dan and I are doing the red (garble) test's FES checkout, we're in step number 5 and so far so good.

CAPCOM Roger, copy that and when somebody's ready to copy two little short flight messages I'll send them up.

SPACECRAFT Okay, standby one.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t276j 248:02:08 09/05/83 PAGE 1

SPACECRAFT And Houston, CDR. Dan and I are doing the red bypass FES checkout. We're in step number 5 and so far, so good.

CAPCOM Roger, copy that and when somebody's ready to copy two little short flight messages I'll send them up.

SPACECRAFT Okay, stand by one. Okay John, go ahead.

CAPCOM Okay Richard, the first one back on panel A7, the MAD strain gage to PCM enable.

SPACECRAFT Okay you've got it.

CAPCOM Thanks. And Richard, basically, the next one here, I'll give you all the rationale, the bottom line is we're trying to return the MTU accumulator 1 to that as our time source. The pass is currently on MTU accumulator 3 due to yesterday's redundant set split and today's IMU 2 problem. As a result we would like to return that pass to MTU accumulator one time. So over on SPEC, GNC SPEC 2, if you would do an item 34 for us please.

SPACECRAFT Okay, we did the item 34 and the entire set is on A1 -- is on accumulator 1 now.

CAPCOM Roger, we copy and thank you very much Richard.

SPACECRAFT You bet. Houston, CDR.

CAPCOM Roger, go.

SPACECRAFT Roger, you'll be proud to know that the red bypass and FES checkout is complete and no problems.

CAPCOM Roger we copy. And Richard we're going LOS here in 30 seconds, we'll see at Orroral Valley in a couple of minutes, if we don't get you there, we'll see you either with TDRS or Buckhorn at 20 + 14.

SPACECRAFT Roger that.

PAO Mission Control Houston, loss of signal at Yarragadee. A very brief pass upcoming at Orroral Valley, the final one of the mission. The maximum elevation a little over 4 degrees and a very short pass of some two minutes. And following that we should have TDRS acquisition in about 17 minutes. Meanwhile here in Mission Control Houston the weather office has completed their briefing -- initial briefing to Flight Director Gary Coen on end of mission weather at Edwards Air Force Base. The satellite photo of the western United States that was on the weather office display showed the entire California and western region severe clear with a thin layer of clouds offshore. And

STS-8 AIR/GROUND TRANSCRIPT t276j 248:02:08 09/05/83 PAGE 2

things looks good at Edwards as far as wind conditions -- predicted wind conditions at landing time tomorrow morning for a left-hand overhead approach to runway 22. Acquisition momentarily at Orroral Valley. Mission Control Houston at 5 days, 19 hours, 44 minutes.

CAPCOM Challenger, Houston with you at Orroral Valley for a short pass.

SPACECRAFT Roger Houston, loud and clear. And Houston, CDR. We just got an edge 66 water message, tank charlie just tripped the 90% limit, indicating 89.

CAPCOM Roger, we copy. We copy Richard, that's no problem, normal FES usage. We're going LOS here in 20 seconds, see you with TDRS at 20 + 00.

SPACECRAFT Okay, see you then.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t277j 248:02:18 09/05/83 PAGE 1

CAPCOM (garble) so over on (garble) plus 00.

SPACECRAFT Okay, see you then.

PAO Mission Control, Houston, ordinarily we would have had acquisition through TDRS at this time; however, the prime computer at White Sands is being shifted over to the backup computer which takes 15 or 20 minutes. We're configured aboard the spacecraft for TDRS acquisition; therefore, Buckhorn in 10 minutes will not be able to receive data from the spacecraft or voice; however, at Merritt Island launch area in 15 minutes, we should be back in contact with Challenger and hopefully by then TDRS will be back on line. This is Mission Control, Houston, 5 days, 20 hours, 4 minutes.

PAO Mission Control, Houston. Should be receiving downlink from Challenger at this time through Merritt Island launch area.

CAPCOM Challenger, Houston's with you at Mila and Bermuda for 10 minutes.

SPACECRAFT Roger Houston, loud and clear. How me?

CAPCOM Roger, loud and clear, Richard.

SPACECRAFT And Houston, we are doing well onboard the, stand by. And Houston, CDR, things are going well onboard. We've completed, we believe, all the actions in the CAP and we're just doing some final packing up and getting squared away to be ready to go into the deorbit prep on time.

CAPCOM Roger, we copy, Richard.

CAPCOM Challenger, I have a change for you in the deorbit prep FS 1-3 when you're ready to copy.

SPACECRAFT Okay, John, ready to copy on 1-3.

CAPCOM Roger Richard, up in the upper right hand corner in the IMU star align attitude pad block for star no. 44, change the TIG minus 02 hours, 11 minutes time to a minus 02 hours, 13 minutes.

SPACECRAFT Okay, I understand that star 44 closes at TIG minus 2:13.

CAPCOM Roger and star 43 closes at TIG minus 02:09.

SPACECRAFT Okay, star 43 closes at 02:09.

CAPCOM Roger that, a good readback.

STS-8 AIR/GROUND TRANSCRIPT t277j 248:02:18 09/05/83 PAGE: 2

SPACECRAFT Okay, is that it?

CAPCOM Yes sir.

SPACECRAFT Okiedoke.

CAPCOM Challenger, Houston, we're going LOS in 18 seconds, see you at Dakar in 5 minutes.

SPACECRAFT Roger John, see you at Dakar.

PAO Mission Control, Houston. Loss of signal at Bermuda. Reacquisition through Dakar in 3 1/2 minutes at which station the Mission Control Center will give a go for payload bay door closing. Commander Dick Truly reported at Merritt Island launch area pass that they were going to the deorbit prep checklist on time, had stowed the crew activity plan. And just prior to LOS at Bermuda, MCC passed up to the crew some new times for IMU star align attitudes, closing of when those stars would be visible to the star tracker. And on the subject of timing, accurate timing is taken for granted these days with quartz digital watches, atomic clocks in laboratories and routine slicing of time into milliseconds and nanoseconds. The master timing entered aboard Orbiter Challenger has a drift rate of less than 1 part in a billion per day.

END OF TAPE

PAO - - quartz digital watches, atomic clocks in laboratories and routine slicing of time into milliseconds and manoseconds. The master timing aboard Orbiter Challenger has a drift rate of less than one part in a billion per day. Not everyone has always demanded such exquisite accuracy in time keeping. Joshua Slocum, in his book "Sailing Alone Around the World" describes how he used an old tin clock, bought for one dollar in Yarmuth, Nova Scotia, to keep Greenwich Mean Time for computing his position during the three-year voyage. "My tin clock and only time piece had by now lost its minute hand," writes Slocum, "but after I boiled her, she told the hours. And that was near enough on a long stretch." Acquisition coming up at Dakar in a minute and a half. Mission Control Houston, at day 5, 20 hours, 33 minutes.

PAO Mission Control Houston. We have acquisition at Dakar.

CAPCOM Challenger, Houston, with you at Dakar for 7 minutes.

SPACECRAFT Roger, Houston, you're loud and clear.

CAPCOM Roger, and you're loud and clear too, Dan.

PAO Flight Director Gary Coen, polling the different console positions here in MCC for the recommendations of GO for payload bay door closing. And it appears that all stations are GO for payload bay door closing. Prior to LOS the CAPCOM will pass that to the crew.

CAPCOM Challenger, Houston, you're GO for payload bay door closing.

SPACECRAFT Roger, Houston, thanks a lot. We're GO for payload bay door closing.

CAPCOM Roger that.

SPACECRAFT And Houston, CDR. We're going to put the CAPs up and start into the deorbit prep.

CAPCOM Roger, we copy. Challenger, Houston, we're going LOS 30 seconds, we will see you at Yarragadee at 21 + 09.

SPACECRAFT Roger, John, see you there.

END OF TAPE

PAO This is Mission Control Houston, TDRS apparently is back towards the end of the acquisition area the next several minutes.

CAPCOM Challenger, Houston, we are locked up with you with TDRS now. Challenger, Houston, with you for 5 minutes with TDRS, how do you read? Challenger, Houston's with you for 4 1/2 minutes, how do you read?

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM Roger, Richard we have a good TDRS lock here for about 4 minutes.

SPACECRAFT Okay, glad to have you.

CAPCOM And Crip, this is Houston, how do you read? Weather flight, Houston, how do you read? Weather flight, Houston, how do you read?

PAO Mission Control Houston, port payload bay door is closed at this time. Mission Control Houston, loss of signal at the edge of the TDRS coverage. The port payload bay door was closed and latched prior to LOS at TDRS. And as we lost contact, the starboard payload bay door was coming closed. Next station in 13 minutes is Yarragadee where we ought to get confirmation that both doors are closed and latched. 5 days, 20 hours, 55 minutes, this is Mission Control Houston.

CAPCOM Challenger, Houston's with you at Yarragadee for 6 1/2 minutes.

SPACECRAFT Roger, John. And Houston, Challenger. We got the payload bay doors closed, they closed with 2 motor times all around and they looked about as straight as an arrow just before the starboard door came closed.

CAPCOM Roger, we copy Dan, thank you very much.

SPACECRAFT Houston, CDR. Houston, CDR.

CAPCOM Roger, go ahead.

SPACECRAFT Roger, thank you for that excellent entry summary that you gave us on the teleprinter. There was one question that I had that was kind of implied, but wasn't stated explicitly. What is the status of lakebed 17 at Edwards?

CAPCOM Roger, stand by Richard, I'll work up an answer for you.

STS-8 AIR/GROUND TRANSCRIPT t279j 248:03:18 09/05/83 PAGE 2

SPACECRAFT Roger, no hurry, but that was an excellent summary, appreciate it.

CAPCOM Roger, Richard 17 is dry, usable and in good shape.

SPACECRAFT Roger, thank you, John.

CAPCOM Challenger, Houston, we're going LOS in 20 seconds, we'll see you at Hawaii at 21 + 35.

SPACECRAFT Roger Houston, see you there.

CAPCOM Roger that, Dan.

PAO This is Mission Control Houston. Loss of signal at Yarragadee. Hawaii in 18 minutes. Over the last 20 years here in Mission Control, Eugene Kranz, the JSC Director of Mission Operations has been a legend in his own time for his attire in brocade vests back when he was a Flight Director. Tonight he's wearing a red, white and blue striped brocade vest. Next station Hawaii in 17 minutes. At 5 days, 21 hours, 18 minutes, Mission Control Houston.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t280j 248:03:51 09/05/83 PAGE 1

PAO Next station Hawaii in 17 minutes at 5 days, 21 hours, 18 minutes, Mission Control Houston. Mission Control Houston, acquisition momentarily through Hawaii.

CAPCOM Challenger, Houston's with you at Hawaii for 5 minutes.

SPACECRAFT Roger, Houston, loud and clear, we've got the alignment going to the verification now and I've got the numbers if you'd like them.

CAPCOM Roger, ready to copy.

SPACECRAFT Okay, stars 44 and 43, the angle error was 0.2, 84.1 was the total angle, IMU 1 plus .02 minus .01 plus .03. IMU 2 minus .04 all balls minus .07, IMU 3 minus .03 minus .03 plus .04 torque time 2:41:28

CAPCOM Roger, we copy Richard.

SPACECRAFT And Houston, Challenger, we had a -- forward number 3 down jet failed a little leak, went through a mal procedure, auto deselected and we're waiting for you to look at ejector DPS. It was during the maneuver to IMU align attitude and the quantities N2 and ox were not diverging.

CAPCOM Roger that Dale, stand by one. And Dan, we show that it is an oxidizer leak. There is no action, leave it deselected.

SPACECRAFT Wilco.

CAPCOM Challenger, Houston, we're uplinking targets and state vector.

SPACECRAFT Roger, Houston. Houston, CDR. The verification numbers look good, are you looking at them?

CAPCOM Roger, stand by one Richard, we're looking at them.

SPACECRAFT Okay, and if you don't have them I do.

CAPCOM Richard, you can press on, the numbers look good to us.

SPACECRAFT Okay, thank you.

CAPCOM Challenger, Houston the vector and targets are onboard.

SPACECRAFT Roger, Houston.

STS-8 AIR/GROUND TRANSCRIPT t280j 248:03:51 09/05/83 PAGE 2

CAPCOM Challenger, Houston, we're going LOS in 30 seconds. We'll see you at the states at 21 + 45.

SPACECRAFT Roger, and I'm assuming the burn attitude printed on page FS1-3 is okay to maneuver to.

CAPCOM Negative. That is not true Richard. We'll send you a number.

SPACECRAFT Okay, I'll remain here until I talk to you again.

PAO Mission Control Houston, LOS at Hawaii. 3 minutes to Buckhorn reacquisition.

CAPCOM Challenger, Houston, with you on TDRS, we'd like a GNC SPEC 1 please.

SPACECRAFT Roger, CRT 1.

CAPCOM Thank you Richard.

SPACECRAFT You bet, how's it going?

CAPCOM Great, got some great weather out there for you.

SPACECRAFT Super.

CAPCOM Challenger, Houston, we've sent all of our teleprinter updates to you, we're through with the teleprinter.

SPACECRAFT Roger, understand.

CAPCOM Challenger, Houston, the CRT is yours, thank you.

SPACECRAFT Roger.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t281j 248:04:16 09/05/83 Page 1

CAPCOM Challenger, Houston, we've sent all of our teleprinter updates to you. We're through with the teleprinter.

SPACECRAFT Roger, understand.

CAPCOM Challenger, Houston, the CTR is yours. Thank you.

SPACECRAFT Roger.

CAPCOM Challenger Houston, I've got your pads for you whenever your ready. I'll have the DEL pad first so it'll have your burn attitude at the top.

SPACECRAFT Okay, stand by. Challenger's ready to copy.

CAPCOM Okay, DEL pad, on deorbit, burn attitude 162091338HAl18 by negative 022278.52:31, propellant all balls, 6:00116116, safe HP 9023379147, oxidizer 001091.6 negative 0.1, entry landing, inertial att. 191291028, prebank left all balls, Guam AOS EI minus 09, LOS EI minus 03, altimeter 29.76, (garble) = 400:43:17 12700, via left overhead 202 degrees, Edwards 22, winds 260/30270/25310/15310/10100/05, surface variable at 05, APU start sequence 1 then 2, note: you can downmode to RCS up to 2 minutes past TIG. Ready for readback.

SPACECRAFT Roger, starting from the top. 162091338118 minus 022278.52:31, all balls 600116116, 9023379147, 001091.6 minus 0.1, 191291028 left 000, Guam 0903, 2976 004317 12700, left overhead 202, Edwards 22 260302702531015310101005, and variable at 5 and start sequence is 1 then 2.

CAPCOM Roger, readback's correct. I've got the -- and did you copy you can downmode to RCS up to 2 minutes late?

SPACECRAFT Oh yes, I forgot to read that back. We're able to downmode to RCS as late as TIG plus 2.

CAPCOM Roger, readback correct and I've got you're maneuver pad whenever you are ready.

SPACECRAFT Clear to copy.

CAPCOM Okay, it'd be OMS both, TV roll 180 plus 0.4 minus 5.7, plus 5.7, 212335, TIG 006/00:15:30.0, (garble) targets 15448 minus 0.6211, 065.832, 096.344 all balls, burn attitude 162091338 40...

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t282j 248:04:25 09/05/83 PAGE 1

CAPCOM ...four targets, 15448 minus 0.6211, 065.832, 096.344, all balls; burn attitude 162091338, 403120:22, and stand by one, we're dropping in and out on our S-band. Challenger, Houston how do you read me now?

SPACECRAFT Loud and clear, you're loud and clear, and start again at REI.

CAPCOM Okay, REI, 403120:22, delta V total 0278.5, 02:31 plus 0268.55 all balls plus 073.90. H118 by minus 022. Ready for readback.

SPACECRAFT (garble) plus 5.7 plus...

CAPCOM Challenger, Houston, we had intermittent lock, stand by for the readback.

SPACECRAFT 65.832, 096.334. 162, 091338, 4031 2022, 278.5, 2 plus 31 plus 268.55 all balls plus 73.9. 118 minus 022.

CAPCOM Roger, the part I heard was good Richard. We picked you up at propellant, if you could start at the top and run me down through theta T.

SPACECRAFT Okiedoke, OMS both 180 plus 0.4 minus 5.7 plus 5.7, 212335, 006, 001530.0, 15448 minus .6211, 65...

CAPCOM Okay, we cut out again, Richard. I've got UHF now, if you could give me HT and theta T please.

SPACECRAFT Okay, HT065.832, theta T 096.344.

CAPCOM Roger, readback is correct.

SPACECRAFT Roger.

SPACECRAFT Houston, Challenger.

CAPCOM Go ahead, Dan.

SPACECRAFT Yes, I have a question on page 1-11 in the pre -- deorbit prep.

CAPCOM Roger, go ahead, we're looking at it.

SPACECRAFT Okay, down there under the main engine hydraulic repress prep, on panel 017, roll delta, both of those lines start with this statement pertaining to 102, does that mean we don't turn out either of our max?

CAPCOM I believe so but stand by, let me make sure.

STS-8 AIR/GROUND TRANSCRIPT t282j 248:04:25 09/05/83 PAGE 2

SPACECRAFT Okay, I'd just like that verified please.

CAPCOM You read that correctly Dan, you can ignore those two steps.

SPACECRAFT Okay, thanks.

CAPCOM And Challenger, Houston, we're about 20 seconds to LOS, you're GO for the ops 3 transition and we'll see you at Dakar at 22 + 09.

SPACECRAFT Okay, see you there.

PAO Mission Control Houston. Loss of signal through Bermuda, Dakar in 5 and a half minutes. During stateside pass the deorbit maneuver pads were read up to the crew - the time of ignition, the attitude burn time, all of the numbers the crew needs for setting up the orbit maneuvering system engines for the deorbit burn which now is some two hours 11 minutes away. The total reduction in velocity is 278.5 feet per second which gives a theoretical perigee of 22 miles below the surface of the Earth, which of course brings the Orbiter into the atmosphere and captured for deceleration or...

END OF TAPE

CAPCOM 122.

PAO ...which now is some 2 hours, 11 minutes away. The total reduction in velocity is 278.5 feet per second, which gives a theoretical perigee of 22 miles below the surface of the Earth, which of course brings the Orbiter into the atmosphere and captured for deceleration, or dynamic deceleration and landing at Edwards tomorrow morning. Dakar in 4 minutes, at 5 days, 22 hours, 5 minutes, this is Mission Control Houston.

CAPCOM Challenger, Houston, with you through Dakar and Ascension for 8 1/2.

SPACECRAFT Roger, Houston and I'm in bubble 11, we just took GPCs 1 and 2 to OPS 3 and things are going normally.

CAPCOM Roger, copy. Challenger, Houston, configure AOS, we've got 2 minutes left.

SPACECRAFT Wilco.

CAPCOM Challenger, Houston, we're 30 seconds here to LOS, we'll be handing over to TDRS.

SPACECRAFT Roger.

CAPCOM Challenger, Houston with you through TDRS for 6 1/2.

SPACECRAFT Roger, Houston. Okay Houston, the DPS entry config bubble 11 is complete, no problems.

CAPCOM Roger, copy. And Challenger, Houston, I've got a couple of steps I'd like you to pick up there in bubble 11.

SPACECRAFT Go ahead.

CAPCOM Roger, Dick, when you transition GPCs 1, 2, 3, and 4 to GNC OPS 3, down there at the bottom by CRT 3 the 4 steps for the BFS and the BFC, we need you to do those 4 steps. That's starting with BFS, GNC, OPS 000 PRO.

SPACECRAFT Okay, understand, so we missed those.

CAPCOM Roger.

SPACECRAFT Okay Houston, we did that and we dropped the targets when we did it, so we'll have to retype them or you reuplink them for us into the BFS.

CAPCOM Okay, stand by. And Challenger we never did put them into the BFS and we'll do that later.

STS-8 AIR/GROUND TRANSCRIPT t283j 248:04:37 09/05/83 PAGE 2

SPACECRAFT Okay, Houston, thanks. Houston, CDR. Radio check on different comm configuration.

CAPCOM Yeah Richard, you're loud and clear.

SPACECRAFT Roger, understand. We're still operating for a few minutes on the speaker box and I'm on my hardline now, I'm -- we're going to go back to the original configuration and we'll let you know when we switch back to hardline for everybody.

CAPCOM Okay, and we're sending the targets to the BPS right now.

SPACECRAFT Okay, thanks a lot and if you'll bear with us, Dan and I are going to get off comm and and go don our stuff and Dale will be monitoring comm.

CAPCOM Okay and the targets are in. And Challenger, Houston, we're losing you on TDRS. Configure LOS, we'll have you on UHF through Botswana for another 4 minutes. And Challenger, Houston, with you on UHF through Botswana for 3 1/2. Did you copy my configure LOS?

SPACECRAFT Roger, configure LOS.

CAPCOM Thank you, Dale. Challenger, Houston, we're 40 seconds to LOS, we'll see you at Yarragadee at 22 + 44. Challenger, Houston, we'll see you at Yarragadee at 22, 44.

SPACECRAFT Roger, see you there, Guy.

PAO Mission Control Houston. Loss of signal at Botswana, Yarragadee in 12 minutes. 1 hour and 44 minutes away from ignition, deorbit ignition, that will bring Challenger back into the atmosphere.

END OF TAPE

CAPCOM Challenger, Houston, we'll see you at Yarragadee at 22 44.

SPACECRAFT Roger, see you there Guy.

PAO Mission Control Houston, loss of signal at Botswana. Yarragadee in 12 minutes. 1 hour and 44 minutes away from ignition, deorbit ignition, that will bring Challenger back into the atmosphere. Coasting toward the first night landing in the space shuttle program. Night take offs and landings have been routine in aviation for many years. In space flight Apollo 17 was launched at night, and the Apollo 8 command module returned from a lunar orbit mission in the predawn darkness to splash down in the Pacific. Challenger's night landing Monday at Edwards Air Force Base is expected to be routine also, with all the radio navigation aids and glide slope lighting aids available to the crew for lining up on final approach. Early aviators had to depend on unreliable wireless equipment and perhaps an occasional mountaintop beacon fire along the groundtrack. As aviation matured, beacon fires were replaced by electric rotating beacons and low frequency radio beams with morse code signals to tell pilots whether they were to the right or left or on the beam. In his short novel "Night Flight" French aviator author Antoine (garble) describes the thoughts that tumble through the minds of a night mailplane pilot in South America when aviation was young. He writes, "the quiet land would bear its sleeping farms and flocks and hills, and all the flotsam swirling in the shadows would lose its menace. If it were possible how gladly he would swim toward the strand of daylight. Sometimes indeed, when daybreak came it seemed like convalescence after illness. What use to turn his eyes toward the East, home of the Sun. Between them lay a gulf of night so deep that he could never clamber up again." Yarragadee in 10 minutes, this is Mission Control at 5 days, 22 hours, 33 minutes.

SPACECRAFT Houston, CDR.

CAPCOM Challenger, Houston, go ahead.

SPACECRAFT Okay, I just switched the primary V flash evap from on up to GPC and evap temps are settling back down again now.

CAPCOM Okay, we copy that. And Richard I've got update to the deorbit burn flight rules and the entry no/go checklist whenever you want to talk about those.

SPACECRAFT Okay, if you could wait a little bit, I'd appreciate it.

CAPCOM Sure thing. And we're here with you at Yarragadee for about 5 minutes

STS-8 AIR/GROUND TRANSCRIPT t284j 248:05:04 09/05/83 PAGE 2

SPACECRAFT We're trying to get in the seats and etc.

CAPCOM Rog.

SPACECRAFT Houston, CDR. On panel L2, verify that you do want the O2 N2 controller valve system 1 open and system 2 closed per page 3-4.

CAPCOM And that's affirmative, Richard.

SPACECRAFT Okay. Houston, CDR. I'm ready to take your notes whenever you have them.

CAPCOM Okay, on -- have you got the deorbit burn flight rules card out?

SPACECRAFT Yes sir, sure do, I'm looking at it.

CAPCOM Okay, first of all you can scratch through the first two columns there under Yes and Yes since we do not have one orbit late available.

SPACECRAFT Roger, I understand.

CAPCOM And then down under OMS, the second and third lines, we can delete the line, "ignition." Neither engine ignites, along with deleting the line, "both engines fail," and that's because you do have RCS downmode capability.

SPACECRAFT Okay, and that is if we can get it started at TIG plus 2 or earlier, is that correct?

CAPCOM That's affirmative, Richard.

SPACECRAFT Okay.

CAPCOM And let me give you a note on that, too. You know you've got the jet L3D that was leaking and now seems to be good and if it's necessary to reselect that jet due to another jet failure, we'd like you to first toggle RM and then reselect that jet, and if you get a subsequent leak message then you can go ahead and leave it deselected.

SPACECRAFT Okay, I understand, Guy.

CAPCOM And we'll see you at Hawaii at 23 09.

SPACECRAFT Okay, see you there.

END OF TAPE

PAO ...and glid slope light...

CAPCOM If you get a subsequent leak message then you can go ahead and leave it deselected.

SPACECRAFT Okay, understand, Guy.

CAPCOM And we'll see you at Hawaii at 23:09.

SPACECRAFT Okay, see you there.

PAO Mission Control Houston. Loss of signal at Yarragadee. Hawaii in 17 minutes and possibly TDRS lockup at about the same time. Challenger now 1 hour and 24 minutes away from ignition of the deorbit burn that will bring it to a night landing at Edwards Air Force base at approximately 2:40 a.m. Central Daylight Time. At 5 days, 22 hours, 51 minutes mission elapsed time, this is Mission Control Houston.

CAPCOM NASA 946, NASA 946, Houston, how do you read? NASA 946, NASA 946, Houston, how do you read? NASA 947, NASA 947, Houston, how do you read? NASA 947, Houston, how do you read?

Houston, NASA 947, 296.6.

CAPCOM Roger, Houston, reading you loud and clear, Crip, how me?

Roger, John, read you the same.

CAPCOM And what freq are you on Crip?

Roger, we're 296.8 per your request.

CAPCOM Roger that.

John, are you ready for my reports?

CAPCOM Roger, Crip, ready to copy.

Okay, that's clear to me and weather's no factor, you can see the lights of LA and Bakersfield and all through the Valley here, so, and the winds are essentially light and variable all the way up. I did copy them, and I could give them to you, but I think they're of no consequence.

CAPCOM Roger, we copy Crip.

Also, we're having a little sync problem with 947 we're going to go after those, swap it out and as a result we have not completed the approach, however of what we've looked at

the lights look good and the Tacan looks good and we haven't really got a good check on the MLS yet.

CAPCOM Roger, copy that.

Okay and I really have nothing else for you, John, unless you've got some specifics.

CAPCOM No sir I don't, we were -- we had a little comm trouble here linking up with you but it looks like we're working good now and I'll just continue according to the format Guy worked out with you.

Roger that, and should we try 296.8 for our next communication check with you?

CAPCOM Roger that, let's meet on 296.8 on the next, it'll be Mila LOS at 2306.

Roger that.

CAPCOM Roger, roger.

CAPCOM Challenger, Houston, with you through Hawaii for 6 1/2.

SPACECRAFT Roger Houston, loud and clear, stand by just one please.

CAPCOM Roger, wilco and configure AOS.

SPACECRAFT Wilco. Houston, CDR. You got anything for us?

CAPCOM Roger, we'd like a GNC SPEC 0.

SPACECRAFT Okay, wait a minute there. Okay, CRT number one.

CAPCOM Okay, we'll be uplinking the HAC positions there and the other thing is, we'd like you to make GPC number 2 the downlister, if you would?

SPACECRAFT Well shoot, we forgot it even though we both wrote it down, sorry about that.

CAPCOM Okay, thank you.

SPACECRAFT I've got a question for you, valve configuration on the WCS vacuum vent valve

CAPCOM Roger, say again about the vacuum vent valve.

STS-8 AIR/GROUND TRANSCRIPT t285j 248:05:22 9/05/83 PAGE 3

SPACECRAFT Roger, request the desired valve configuration for the WCS vacuum vent valve.

CAPCOM And Challenger, when you close out the WCS - -

END OF TAPE

CAPCOM Roger, say again about the vacuum vent valve.

SPACECRAFT Roger, request the desired valve configuration for the WCS vacuum vent valve.

CAPCOM And Challenger, when you close out the WCS then we'd like the valve closed.

SPACECRAFT Okay, understand.

SPACECRAFT Houston, Challenger.

CAPCOM Challenger, go ahead.

SPACECRAFT Roger, one more question. Pictorial Switch List has the primary main C off and before I turn that off, I just want to verify that is indeed correct.

CAPCOM Roger, that's correct. You can turn it off.

SPACECRAFT Okay.

CAPCOM And Challenger, I've got an update to the Entry NO/GO Checklist also whenever you're ready for that.

SPACECRAFT Roger Houston, go ahead.

CAPCOM Okay down there towards the bottom under RCS, need to add another line and if 2 pitch jets on the same side then you're NO/GO for PTI's, just PTI no.1, it's PTI's above with Qbar less than 20 so that's only PTI no.1 will be NO/GO.

SPACECRAFT Roger, I understand. The loss of 2 pitch jets on the same side, NO/GO for PTI no.1.

CAPCOM That's affirmative, Richard. Thank you.

CAPCOM Challenger, Houston, we've got the G-MEM onboard, the CRT is yours. Thank you.

CAPCOM Challenger, Houston, we've got the G-MEM onboard, we're through with the CRT, thanks.

SPACECRAFT Thank you, Guy.

CAPCOM Challenger, Houston, we're about 30 seconds to LOS. We'll see you at Buckhorn at 23 plus 19, configure LOS.

SPACECRAFT Roger, Houston, see you there.

PAO This is Mission Control, Houston. Loss of signal at Hawaii, Buckhorn station at Edwards Airforce Base in 3 minutes

At Edwards, Robert Crippen is doing a weather scouting flight in NASA-947, which is one of the shuttle training aircraft. He reports from his vantage point that he can see the lights in the Los Angeles Basin up into San Joaquin Valley, Bakersville and other city lights. The weather is absolutely no factor for this morning's landing and the winds are light and variable at all levels. Mission Control at 5 days, 23 hours, 16 minutes.

PAO Mission Control, Houston, we have acquisition at this time through Buckhorn. Fifty seven minutes remaining until ignition for the deorbit burn on this orbit.

CAPCOM Challenger, Houston with you through Buckhorn for 7 minutes.

SPACECRAFT Roger Houston, loud and clear.

CAPCOM You're loud and clear also, Richard.

SPACECRAFT Houston, CDR. Would you like to say a gimbal check?

CAPCOM Roger, we're ready.

SPACECRAFT Okay the secondaries are in progress.

CAPCOM Roger, we're watching.

SPACECRAFT And here come the primaries.

CAPCOM Roger.

SPACECRAFT Okay Houston, gimbal check looks good onboard.

CAPCOM Roger.

SPACECRAFT APU prestart? And Houston, Challenger, are you ready to watch the

CAPCOM Roger Dan, go ahead, we're ready.

SPACECRAFT Okay. Hey, Houston, the APU prestart's complete.

CAPCOM Roger, we concur. And it looks good, Dan.

SPACECRAFT Roger, it looked good up here.

CAPCOM Challenger Houston, the gimbal check all looked good to us, too.

SPACECRAFT Roger that.

END OF TAPE

CAPCOM And it looks good, Dan.

SPACECRAFT Roger, it looked good up here.

CAPCOM And Challenger, Houston, the gimbal check all looked good to us, too.

SPACECRAFT Roger that.

CAPCOM And Challenger, Houston, we're about 30 seconds to LOS, configure LOS, we'll see at Mila in about 2 minutes. Challenger, Houston, with you through Mila, configure AOS.

SPACECRAFT You got it Houston.

CAPCOM Roger, and you've got a state vector coming up and I've got a switch back on panel R12 for you.

SPACECRAFT Okay, I understand the state vector is on the way up and call out the switch.

CAPCOM Right, the supply water dump isol valve to close.

SPACECRAFT Wilco, that's in work.

CAPCOM Roger, thank you.

SPACECRAFT Okay, it's closed.

CAPCOM Copy thank you. And Challenger, Houston, you got the new state vector in both the primary and the backup and you'll need to reload them.

SPACECRAFT Okiedoke.

CAPCOM And Challenger, Houston, we see the solutions and they both look good.

SPACECRAFT Roger, Houston.

CAPCOM And Challenger, I've got a note for your entry checklist there. The hydraulic fluid thermal conditioning at EI minus 11 is not required. That's on page 3-30.

SPACECRAFT Roger, I understand. Delete the hydraulic fluid thermal conditioning on page 3-30.

CAPCOM That's affirmative, Richard.

SPACECRAFT And Houston, CDR. We have completed the OMS burn prep on page 3-6, you might check our configuration and we're sitting in the checklist waiting on TIG -25 for vent door close.

CAPCOM Okay, thank you, we'll look at it.

SPACECRAFT Okay.

CAPCOM And Challenger, Houston, your configuration is looking good.

SPACECRAFT Super.

CAPCOM Challenger, Houston, we'll be handing over to TDRS in about 1 minute. If we miss you there, we'll have you at Ascension at 23 47.

SPACECRAFT Okiedoke.

CAPCOM NASA 947, Houston, how do you read?

John, we have Houston, NASA 946, reading you loud and clear, no update, that previous report. We're just now taking off in 946.

CAPCOM Roger, copy that Crip and if you'd like I'll wait and catch you at LOS Ascension.

Ascension. Roger, that's affirmative, we'll talk to you, LOS,

CAPCOM Roger that, 23 25. See you then Crip. And the spaceship is looking good.

PAO Mission Control Houston. Shuttle training aircraft 946 taking off at Edwards Air Force Base for another weather survey. The picture of the shuttle training aircraft piloted by Bob Crippen is now on an infrared imaging system loaned to NASA by the Department of Defense.

CAPCOM Challenger, Houston, with you on...

SPACECRAFT Roger.

Convoy flight on air to ground UHF. For a voice check. Convoy flight how do you read? Convoy flight for voice check, how do you read?

flight this is convoy 1 read you loud and clear how me?

You're the same, thank you.

CAPCOM Challenger, Houston, we'll be handing over to Ascension STADAN in about 10 seconds. And Challenger, Houston, with you through Ascension for 5 and a half minutes.

STS-8 AIR/GROUND TRANSCRIPT t287j 248:05:55 09/05/83 PAGE 3

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM Roger, you too.

END OF TAPE

CAPCOM And Challenger, Houston, with you through Ascension for 5 1/2 minutes.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM Roger, you too. Challenger, Houston, I've got a switch for you on R12 for me.

SPACECRAFT Okay, go ahead.

CAPCOM Roger, we've got some water trapped between the supply water dump valve and the dump isol valve. So it won't heat up and expand on entry, I'd like for you to take the dump valve and cycle it open for 5 seconds then back closed.

SPACECRAFT Wilco, standby. Okay, Houston, we've accomplished that and we're looking at a real pretty ice shower.

CAPCOM Roger. And the config looks good to us too, thank you.

SPACECRAFT Okay.

PAO Mission Control Houston. Infrared video of the Shuttle training aircraft making an approach at Edwards, a simulated Shuttle landing approach.

- - still in the clouds.

CAPCOM Roger copy and you are GO for deorbit burn.

SPACECRAFT Roger, GO for the deorbit burn, thank you.

CAPCOM Rog, and Crip's flying around in the STA and he says you'll have a real pretty sight, looking down at all the lights in California coming across.

SPACECRAFT Great, we're looking forward to it.

PAO On NASA select television at this time, a shot of the Control Room at Dryden Flight Research Center.

CAPCOM Challenger, Houston, we'll be handing over to TDRS in about 30 seconds.

SPACECRAFT Okay, looking forward to it.

PAO Mission Control, Houston. Deorbit burn in some 21 minutes and 40 seconds.

(garble), Houston, how do you read?

Roger, Houston, NASA 946, loud and clear, John and we've completed approach to runway 22 and weather still remains good. There may be a small amount of turbulence somewhere around 20,000 feet, but I believe that it will be no factor at all in the Challenger. The lights are all set up and looking good MLS is sweet. We did get a disparity of about 1400 feet between tacan and MLS that caused some overshoot coming on final, but I would not change runways for that. We're going to set up now to look at runway 17.

CAPCOM Okay and Crip, do you think we should advise Richard of that disparity between tacan and MLS state.

No sir, I don't believe so.

CAPCOM Okay we won't, we'll tell him that everything's still nominal and like we have read up to him initially, if you agree with that. And 946, Houston, how do you read?

946, loud and clear, go ahead, John.

CAPCOM Roger, Crip if that's the end of what -- your report right now, we'll see you at LOS Botswana at 2336.

See you there.

CAPCOM Roger that. Challenger, Houston, with you on TDRS.

SPACECRAFT Roger, Houston, loud and clear.

CAPCOM You too, Richard. And Challenger, Houston, we're 1 minute to TDRS LOS. Configure LOS. We'll have you on Botswana for another 3 minutes UHF.

SPACECRAFT Roger Houston.

PAO Mission Control Houston. Challenger maneuvering at this time to the deorbit burn attitude which is heads down, tail toward the direction of flight, slightly pitched down. After the burn, the Spacecraft will be pitched around to 40 degrees, nose up.

CAPCOM Challenger, Houston with you UHF, Botswana for 2 1/2.

SPACECRAFT Roger, loud and clear.

CAPCOM Challenger, Houston, 1 minute to LOS. Have a good burn, we'll see you at -- over Guam at EI -9.

SPACECRAFT Roger, we'll see you there.

STS-8 AIR/GROUND TRANSCRIPT t288j 248:06:19 09/05/83 Page 3

CAPCOM NASA 946, Houston, how do you read?

Houston, NASA 946, loud and clear. We've completed approach to runway 17, all conditions are good, lights look good, and really nothing else to report to you about conditions. Still GO here.

CAPCOM Roger that Crip, thanks a lot and - -

END OF TAPE

Houston, NASA 946 loud and clear, we've completed approach to runway 17, all conditions are good, lights look good and really nothing else to report to you. All conditions still go here.

CAPCOM Roger, that Crip, thanks a lot and everything's going well with the Orbiter. I'll see you, unless you have something else, at AOS about 5 minutes before AOS Guam, at 00 0, at 23:55.

Roger, expect the call at 55.

CAPCOM Roger, that.

PAO Mission Control Houston. Ignition now 10 minutes away for the deorbit burn that will bring Challenger back to a landing in the early morning hours at Edwards Air Force Base. The next contact with Challenger will be some 9 minutes prior to entry into the atmosphere at Guam and that's 23 minutes from this point. Hawaii will likely be unable to make contact with the spacecraft because of the ionized sheath during blackout. Mission Control at 6 days, 0 hours, 6 minutes. Mission Control Houston, coming up on time for ignition of the deorbit burn. Mark- the OMS engines should be burning at this time to bring Challenger back into the atmosphere. The burn lasts two minutes and 37 seconds. We should get a report from the crew later on at Guam tracking station some 13 minutes from now. It'll be about 9 minutes prior to entering the atmosphere at that time. Meanwhile at Dryden Flight Research Center, the people out there in their control room doing their thing. Shuttle training aircraft 946 piloted by Bob Crippen has made one run of a simulated orbiter landing on runway 22 and another one on the lakebed runway on runway 17. The infrared imaging system shown earlier tracking the shuttle training aircraft will be used as the Orbiter approaches and lands at Dryden. At 6 days, 0 hours, 16 minutes, this is Mission Control Houston.

CAPCOM NASA 946, Houston, do you have any changes to report?

Houston, NASA 946, that's a negative. Everything here, everything here is still go, the (garble) is go, the weather's go, the only thing Richard's missing is the captain's moons.

CAPCOM Roger that, Crip and thanks a lot for your help tonight.

(garble) make it a lot easier than launch.

PAO This is Mission Control, Houston, 50 seconds away from acquisition through Guam. On the descending track of

STS-8 AIR/GROUND TRANSCRIPT t289j 248:06:36 09/11/83 PAGE 2

Challenger, as it nears atmospheric entry in the western Pacific. Guam should have acquisition in about 30 seconds. We should get from the crew at that time, a report on how the deorbit burn went.

CAPCOM Challenger, Houston, with you through Guam for 5 minutes.

SPACECRAFT Roger, Houston, loud and clear, burn was on time and nominal. Residuals were zero and we're sitting waiting to go to 304.

CAPCOM Roger, copy. Sounds good. And Challenger, configure AOS.

PAO Data telemetered through Guam show that all three auxilliary power units are running at normal turbine speed of above 100 percent rated speed.

SPACECRAFT We're still configured to AOS (garble)

END OF TAPE

PAO Data telemetered through Guam show that all three auxilliary power units are running at normal turbine speed of above 100 percent rated speed.

We're still (garble) AOS (garble).

CAPCOM That's affirmative.

SPACECRAFT We're really skimming along out here. Okay, Houston, we're in 304.

CAPCOM Roger, we're looking.

SPACECRAFT VTR's are enabled Houston.

CAPCOM Roger. Challenger, we're at 30 seconds to LOS. Configure LOS, we'll see you about Mach 11.

SPACECRAFT You bet, see you there.

CAPCOM Roger, and everything's looking good.

SPACECRAFT Same onboard, Houston the airspeed indicator is just beginning to tickle.

PAO This is Mission Control Houston, loss of signal at Guam. Some 4 minutes now until -- 3 minutes until the Challenger shall start entering the atmosphere at 400,000 feet. Dick Truly reported that the ignition of the deorbit burn was on time, totally nominal with no trim residuals to be maneuvered out. We're some 32 minutes now away from predicted touchdown on runway 22 at Edwards, at 6 day, 0 hours, 36 minutes, this is Mission Control Houston. Mission Control Houston. Challenger now two minutes into the atmospheric entry. Mission Control Houston. Challenger now entering the communications blackout. Predicted exit from blackout will be at 55 minutes, 39 seconds past the hour, elapsed time hour, that is. This is Mission Control Houston. Challenger still in blackout for about the next 8 minutes. Here in Mission Control, the flight dynamics officer displays have been shown, or are being shown on the front display screens, including one that shows the predicted ground track as against the different Mach numbers as the Orbiter decelerates in its approach to the west coast. Concentric radiating circles indicating Mach 14, Mach 12, Mach 10, Mach 8, 6, 5, 4, etc. all the way into Edwards. We have reports that Hawaii has visual contact with the Orbiter but unable to punch through the ionization sheet surrounding the spacecraft during the blackout period. Mission Control, Houston. Out at Edwards Air Force Base the NASA convoy of vehicles that will go to service the Orbiter after landing have been directed to turn off their headlights to avoid any unnecessary glare in the eyes of the crew as they do their final approach and landing. 5 minutes remaining in the

STS-8 AIR/GROUND TRANSCRIPT t290j 248:07:02 9/05/83 PAGE 2

predicted blackout period. Mission Control Houston, 2 minutes remaining in the predicted blackout period. We now have C-band contact with the Challenger. Flight dynamics officer reports the spacecraft is slightly north of the ground track, now down to Mach 12. Altitude 178,000 feet.

CAPCOM Challenger, Houston, configure AOS.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t291j 248:07:27 09/05/83 PAGE 1

PAO The spacecraft is slightly north of the ground track, now down to Mach 12, altitude 178,000 feet.

CAPCOM Challenger, Houston, configure AOS.

SPACECRAFT Roger Houston, load and clear.

CAPCOM You're load and clear also, the energy ground track and Nav are all GO.

SPACECRAFT Roger that. We're coming through Mach 11 at 250,000 feet.

CAPCOM Roger that.

SPACECRAFT Okay, Houston, coming through Mach 8 at about 222,000 feet. All the PTIs look real good and stable so far, very well done.

CAPCOM Roger, copy.

SPACECRAFT And tacans look good onboard.

CAPCOM Challenger, take tacans.

SPACECRAFT Wilco, taking tacans.

CAPCOM And Challenger, Houston, be advised we show your altitude readouts to be quite a bit high, we're showing you coming through 138,000 now.

SPACECRAFT Roger that.

PAO Range 200 nautical miles.

SPACECRAFT Okay Houston, I've got the Channel Islands and the coast in sight, and how does our energy look?

CAPCOM Energy looks good.

SPACECRAFT Okay.

PAO Mach 6. 124,000 feet. 140 nautical miles.

SPACECRAFT (garble) approach coming up.

CAPCOM Roger.

PAO Velocity 4600 feet per second. Air data probes are out on the spacecraft, now down to 110,000 feet in altitude. Sink rate at about 300 feet per second. About 95 nautical miles from touchdown. 95,000 feet altitude.

STS-8 AIR/GROUND TRANSCRIPT t291j 248:07:27 09/05/83 PAGE 2

SPACECRAFT The air data looks good onboard.

CAPCOM Roger, Challenger, take air data.

PAO Challenger's ground track slightly north of the predicted track.

SPACECRAFT Challenger to Houston, air data went in just about 2.9 (garble).

CAPCOM Roger, and at your convenience we'd like a vector transfer to backup.

SPACECRAFT Wilco.

PAO Velocity 2400 feet per second. Altitude 80,000 feet.

SPACECRAFT And the vector's in the backup.

CAPCOM Roger, thank you.

PAO Range 50 miles.

SPACECRAFT ...too, Houston, Dan and I both have a good head and...

CAPCOM Roger, sounds good.

PAO Coming through 70,000 feet in altitude, velocity 1631 feet per second, sink rate 284 feet per second.

CAPCOM Challenger, Houston, I've got new surface wind and altimeter. Surface winds, 190 at 5, altimeter 2984.

PAO Range to go, 31 miles.

SPACECRAFT - - 2984, copy.

CAPCOM Readback correct.

PAO Coming down through 52,000 feet altitude, velocity 1039 feet per second. Range 25 nautical miles to acquisition of the heading alignment circle. 45,000 feet. 21 miles range. 40,000 feet. Challenger now has intersected the heading alignment circle, altitude 31,000 feet.

END OF TAPE

STS-8 AIR/GROUND TRANSCRIPT t292j 248:07:37 09/05/83 PAGE 1

PAO 40,000 feet. Challenger now has intersected the heading alignment circle, altitude 31,000 feet. 17 miles to go. Airspeed 267 knots. 22,400 feet, 9 miles range. 260 knots. 18,000 feet.

SPACECRAFT Okay, Houston, the lights look real pretty.

PAO 265 knots.

CAPCOM Everything's looking good.

PAO 15,000 feet altitude, range 8.6. Now having the infrared imaging system picking up the Orbiter.

SPACECRAFT Houston, Challenger, ball state 0.0.

CAPCOM Roger, copy.

PAO 9,600 feet. 279 knots.

CAPCOM Challenger, Houston. Looking good on final.

PAO 7,000 feet, 4 and a half miles. 290 knots, 4100 feet, 285 knots, 3 miles. Airspeed 300 knots, gear down, range 1 mile. And we mark touchdown at 8 minutes, 40 seconds.

SPACECRAFT Houston give the commander an okay 3.

Houston, Challenger to stop.

CAPCOM Roger, copy. Welcome back, great show.

PAO We copied end of roll at 9 minutes 32 seconds past the elapsed time hour. And the first night landing ends the six day flight of STS-8, with Orbiter Challenger.

SPACECRAFT Convoy 1, Challenger, how do you read?

Challenger, this is Convoy 1. Read you loud and clear, how me?

SPACECRAFT Loud and clear and I can see you guys coming.

We'll be right with you, welcome home.

SPACECRAFT Thanks sir. And Houston, CDR. The MADS power is your call.

CAPCOM Roger, Houston, leave the MADS on.

SPACECRAFT Wilco, John.

STS-8 AIR/GROUND TRANSCRIPT t292j 248:07:37 09/05/83 PAGE 2

CAPCOM And Challenger, Houston, I have two items for postlanding changes.

SPACECRAFT Roger, John, ready to copy.

CAPCOM Roger, use GPC 2 for G9. And the second one delete the hydraulic load test.

SPACECRAFT Okay, the first time we go into G9, we're going to take all four there, correct, and then the second -- and then when we, after that when we go down to one GPC we'll use GPC 2, is that charlie?

CAPCOM That's affirmative, Richard.

SPACECRAFT Roger, that.

PAO Out at Edwards Air Force Base a myriad of automobiles and trucks and vans going out to the spacecraft.

SPACECRAFT Okay, Houston, we're (garble) 5-4 and 5.

CAPCOM Roger, we're with you Richard.

PAO Convoy commander reports no leaks around the spacecraft.

SPACECRAFT Houston, Challenger, (garble).

CAPCOM Roger, we copy.

PAO Pilot Dan Brandenstein's comment of okay 3 meant that he had a good pass and caught the 3rd wire on the carrier deck, the target wire in a carrier landing.

SPACECRAFT And the doors are gone and RCS OMS safing is done onboard.

END OF TAPE

END
DATE
FILMED

OCT 27

1 83